1973

The modal balance in transportation

David Gregory Ciebien
The University of Montana

THE MODAL BALANCE IN TRANSPORTATION

by

David Gregory Ciebien

B.Sc., University of Montana, 1968

Presented in partial fulfillment of the requirements for the degree of

Master of Science

UNIVERSITY OF MONTANA

1973

Approved by:

George J. Barbe
Chairman, Board of Examiners

John R. Stewart
Dean Graduate School

Dec 31, 1973
Date

1-4-74

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Statement of the Problem

Transportation is a vital economic activity. Because Canada has a relatively small population strung out over a vast land mass, it has a transportation-intensive economy. The work of Dr. J.J. Deutsch, Chairman of the Economic Council of Canada, appears to substantiate this conclusion, inasmuch as transportation services account for six percent of the value added to the Gross National Product in Canada, as opposed to a roughly equivalent estimate for the U.S.A. of four percent.[1]

As an economic activity, transportation "exists because of the difference in the marginal utility of a (person or) goods at one place and its marginal utility at another place."[2] The essential function of transportation is to move people and goods from places where their marginal utility is relatively

---

[1] Dr. J.J. Deutsch, speech to the First Canadian Transportation Forum at Lac Beauport, Quebec, on September 19, 1965.

[2] William H. Dodge, Common Goals of Common Carriers - A Blueprint for Intermodal Co-ordination, Wisconsin Reprint No. 2 from the I.C.C. Practitioners' Journal, October 1963, (Madison Wisc.: Bureau of Business Research and Service, 1964).

low, to places where their marginal utility is relatively high. "Transportation is not purchased for its own sake;"[1] but rather to further the ultimate aim of increasing the marginal utility.

In moving goods from one place to another, an overriding consideration of transportation users is the economics of the move. Since the economics of the move are directly related to the economics of the transportation system, what is desirable from the user's point of view is an efficient and adequate transportation system making the best use of all modes of transportation at the lowest total cost.

Dr. Deutsch sums up the need for an efficient transportation system in the following statement: "If we are to realize our potential rate of economic activity, then we must ensure the best possible allocation of our resources, including our transportation resources. Because transportation costs enter in such large measure into the final costs of Canadian products, anything less than optimal utilization of transportation resources will adversely affect the competitiveness of the economy. It is thus necessary that each mode of transportation fill, as far as possible, that role for which it is best qualified. Failure to achieve this objective will not only result in a misallocation of transportation resources, but can lead to a misallocation of resources elsewhere in the economy."[2]

---

[1] Ibid., p. 2.

[2] Deutsch, op. cit.

The allocation of resources and, moreover, the economics of transportation are affected by the government's involvement in transportation, as will be shown later. Before 1967, Canada had no transportation policies which could be described as truly national and through which economic objectives could be pursued. Parts of the transportation system had gotten into difficulties with action being taken on an ad hoc basis to solve the immediate problems affecting particular parts of the country or particular sections of the transportation industry at a particular time.

One result of this fragmented approach was the building up of a patchwork of inconsistent and often obsolete legislation and regulation which reflected neither the dramatic changes in technology, nor the new competitive environment. These conditions tended to inhibit the application of modern technology and market-oriented management techniques to transportation problems, and to make the overall cost of transportation higher than it need be.

The National Transportation Act of 1966-67 attempted to change this situation by defining andimplementing a national transportation policy which encourages the development of an economic transportation system. The policy statement preceding the National Transportation Act states:

> "1. It is hereby declared that an economic, efficient and adequate transportation system making the best use of all available modes of transportation at the lowest total cost is essential to protect the interests of the users of transportation and to maintain the economic well-being and growth

of Canada, and that these objectives are most likely to be achieved when all modes of transport are able to compete under conditions ensuring that having due regard to national policy and to legal and constitutional requirements

(a) regulation of all modes of transport will not be of such a nature as to restrict the ability of any mode of transport to compete freely with any other modes of transport;

(b) each mode of transport, so far as practicable, bears a fair proportion of the real costs of the resources, facilities and services provided that mode of transport at public expense;

(c) each mode of transport, so far as practicable, receives compensation for the resources, facilities and services that it is required to provide as an imposed public duty; and

(d) each mode of transport, so far as practicable, carries traffic to or from any point in Canada under tolls and conditions that do not constitute

(i) an unfair disadvantage in respect of any such traffic beyond that disadvantage inherent in the location or volume of the traffic, the scale of operation connected therewith or the type of traffic or service involved, or

(ii) an undue obstacle to the interchange of commodities between points in Canada or unreasonable discouragement to the development of primary or secondary industries or to export trade in or from any region of Canada or to the movement of commodities through Canadian ports;

and this Act is enacted in accordance with and for the attainment of so much of these objectives as fall within the purview of subject matters under the jurisdiction of Parliament relating to transportation."[1]

---

[1] Canada, National Transportation Act, 1966-67, (Ottawa: Queen's Printer), Chapter 69, pp. 1,2.

Although the government appeared to be fostering an atmosphere for optimum resource allocation and an economic transportation system through the National Transportation Act, there have been no attempts to assess the success or failure of the Act.

Hypothesis

The hypothesis is: The government has not achieved the following conditions which are set out in the National Transportation Act and which are prerequisites to an economic, efficient and adequate transportation system:

(a) regulation of all modes of transport will not be of such a nature as to restrict the ability of any mode of transport to compete freely with any other modes of transport;

(b) each mode of transport bears a fair proportion of the real costs of the resources, facilities and services provided that mode of transport at public expense; and

(c) each mode of transport receives compensation for the resources facilities and services that it is required to provide as an imposed public duty.

Exclusion of condition (d) of the Act relating to tolls from the thesis does not mean to infer that the condition has or has not been achieved. Instead, the examination of this condition was excluded because of a lack of data and to limit the scope of the problem to a manageable size.

In order to prove or disprove this hypothesis, the thesis has examined the present degree of government involvement in each of the modes under the following headings: Economic Regulation, Ownership of Facilities (investment), and Subsidies. In addition, the thesis has examined a brief history of government net expenditures and subsidies from the year 1960-1961 to the most recent year which is available. Each type of government involvement was then analyzed to determine if it is consistent with the conditions set out in the National Transportation Act.

Scope and Limitations of the Study

For the purpose of this study, transportation is limited to inter-city transportation within Canada. This limitation was required because (1) data were not available for intra-city traffic, and (2) the objective of the N.T.A. is optimum resource allocation between modes and intra-city traffic is virtually all road transportation. The thesis was also limited to transportation within Canada for basically the same reasons. First, data on foreign carriers were unavailable. Second, there is little intra-modal competition. Passenger transportation is mainly by air and freight transportation is mainly by water, except in the case of transportation to the United States, in which case the portion of traffic hauled to the borders is included.

In the examination of regulation, the thesis was limited to regulation of freight transportation. In dividing the field of regulation, the important criterion considered was the need to group competing modes. This required a passenger-freight division. Freight was then chosen because of its magnitude in terms of revenue, tons, ton-miles, and overall economic importance relative to passenger transportation.

In the examination of publicly provided facilities, the net annual government (capital and operating) expenditure on all transportation facilities for all modes was examined as far as data permit. Data on government expenditure are limited to federal expenditure for all modes and provincial and municipal expenditures on roads. Notably missing from the available data are municipal government expenditures on local airports and harbours, and provincial expenditures on water and air transportation. However, the only one of these expenditures which appears to be of any magnitude is municipal expenditure on local airports.

In the examination of publicly imposed duties (required public services), once again the thesis was limited to freight transportation. Of all the modes, only rail receives any sizable passenger subsidies. These subsidies have only begun since the implementation of the Act and appear to be in strict conformity with the terms of the N.T.A. since the subsidies are for services imposed by public duty.

It has been assumed that carrying the mail is not an imposed public duty and that the revenues obtained for carrying mail are strictly for the services rendered and not in any way a subsidy.

Organization of the Study

Chapter I introduces the problem, defines its scope and limitations, and attempts to explain the need for dealing with it in a thesis.

Chapter II outlines, in general terms, the various forms of government involvement in transportation.

Chapters III to VII examine each of the five modes separately: rail, road, water, air, and pipeline, using parallel chapter structures. Each of the chapters contains a history and a review of the present status of the modes. The government involvement in transportation is then examined under the following headings: "Regulation," "Ownership of Facilities," and "Subsidies."

Chapter VIII is a summary analysis of the types of government involvement in each of the five modes.

Chapter IX presents the conclusions of the thesis.

CHAPTER II

GOVERNMENT INVOLVEMENT IN TRANSPORTATION

Introduction

The government, in all its ramifications, is today the largest organized activity in the economy. In the year ending March 1970, federal government expenditures amounted to $13.081 billion, and provincial and municipal expenditures amounted to $14.784 billion, representing a total government expenditure, excluding intergovernmental transfers, of $27.865 billion.[1] Of these totals, federal expenditure for transportation amounted to $594.9 million, and provincial and municipal expenditure amounted to $1,866.9 million for a total of $2,461.8 million, or nine percent of the total expenditure of all levels of government.[2]

This relatively large amount of government expenditure on transportation naturally leads to questions, such as:

1. What is the role of government in transportation?

and,

2. On what is the money spent?

---

[1] Canadian Tax Foundation, 1972-73 - The National Finances: An Analysis of the Programme of Revenues and Expenditure of the Government of Canada, (Toronto, 1972), p. 4.

[2] Ibid., p. 24.

A cursory examination is made of the first question in this chapter. The second question is dealt with for each mode in Chapters III to VII.

The Government's Role in Transportation

The government has made it its duty to ensure an adequate transportation system to meet national and regional needs. "The federal government plays a two-fold role in the development of transportation services. One is the promotional role, ensuring the growth and development of the kind of transportation appropriate to the times; the other is a regulatory role, including economic regulation of rates and services and also technical regulation to meet safety requirements and for other purposes."[1] The provincial and municipal governments play similar roles for transportation systems falling within their jurisdictions.

The determination of the types of government regulation and promotional policies are a major transportation issue. Government policies on transportation determine the characteristics of the transportation system and hence the direction of future growth. Inequities in regulation and promotion between the various modes of transportation would shift the modal balance in transportation,[2]

---

[1] Canada, Statistics Canada, Canada Year Book, 1972, (Ottawa: Information Canada, 1972), p. 940.

[2] Modal balance is the balance in the traffic level which exists between the five modes, i.e., the modal balance for freight traffic in 1970 measured by ton-miles was Rail - 36 percent, Road - nine percent, Water - 26 percent, Air - .1 percent, Pipeline - 29 percent. One of the major factors which determines modal balance is government involvement in transportation, such as investment in facilities, subsidies and regulation.

resulting in a misallocation of resources and increased transportation costs.

Transportation Regulation

"The basic purpose of regulation should be directed to maximize utilization of facilities and minimize adverse effects."[1] In attempting to fulfill this regulatory role, the government has:

1. controlled entry into the industry,
2. controlled rates,
3. controlled service,
4. set safety standards,
5. set labor codes and working conditions, and
6. provided protection to the environment.

Since this paper focuses on government intervention vis-a-vis its relationship to the National Transportation Act, it is only concerned with the first three items, namely, entry, rate, and service controls, commonly referred to as economic regulation.

Economic Regulation

"Economic regulation is designed to constrain free business decision-making to avoid destructive competition, exploitation of monopolistic power,

---

[1] I.R. Feltham, Transportation Regulation in Canada, (unpublished manuscript), p. 38.

cutting corners with regard to service and safety, and perhaps other 'natural' tendencies of unfettered free enterprise."[1]

The National Transportation Act requires that regulation of all modes of transport will not be of such a nature as to restrict the ability of any mode to compete freely with any other modes of transport.

The thesis did not attempt to determine whether or not regulation is required or that the degree of regulation specified in the National Transportation Act is the optimum degree required. What was examined is whether or not the present regulation contained in the N.T.A. does, in fact, restrict the ability of any mode to compete freely. This was done through a comparison of entry and service control, and rate control, on a modal basis.

Entry and Service Control

The purpose of entry control is to restrict unlimited competition within a given area. Entry control assumes that someone wants to offer the service and that there is either actual or potential competition. Furthermore, the competition, whether actual or potential, is assumed to be destructive to some segment of the economy.

Entry control is generally based on the applicant establishing "public convenience and necessity" or "public interest" at a public hearing. The fallacy

---

[1] Ibid., p. 2.

is that the criteria for establishing these principles have not been defined, so a large burden is placed on the applicant.

The purpose of service control is to ensure an adequate level of service from those firms licensed to operate within a given area using a minimum amount of resources and infrastructure necessary to facilitate an adequate and efficient transportation service.

Rate Control

The overriding consideration in rate control is cost. For the purpose of accurate intermodal comparison, it is obviously necessary that any minimum standards for rates be calculated on uniform principles. If costs are to be the desideratum for the price of any service, the principles of costing should be uniform as far as that is possible. The thesis examined to what extent both rate regulation and costs between modes are uniform. Under rate control, two aspects were examined: prevention of "unfair" or uneconomic competition, and prevention of monopolistic exploitation by rate agreements or exploitation of captive shippers.

Transportation Promotion

In its promotional role, the government

1. builds and operates public facilities, such as highways, airports and waterways,

2. subsidizes carriers,

3. provides inter-government grants, and

4. conducts research in all areas of transportation.

Government Provided Facilities and Services

Government investment in transportation facilities came about because of the need for economic development in Canada and because private capital was not available for this purpose. Since the federal and provincial governments could not ignore the country's economic development, they were faced with providing the capital for the much needed transportation facilities.

In order to determine what facilities are provided by the government, the facilities have been classified as either vehicle, right-of-way, or terminal. In each of the chapters dealing with a specific mode, the ownership of these three types of facilities were examined to determine the extent of major government investment. Government operation of these facilities was also indicated.

In the National Transportation Act, it is stated that "each mode of transport, so far as practicable, bear the real costs of resources, facilities and services provided at public expense" in order that an economic, efficient and adequate transportation system be attained. The thesis examined the present degree of government investment in order to determine if the modes do, in fact, bear the real cost of the publicly provided resources.

Subsidies

In the theoretical case of free competition, the market place allocates resources optimally. This optimal allocation, however, may not be just or equitable in a real-life situation. Thus, in the public interest, resources may have to be allocated in a sub-optimum fashion in order to satisfy non-economic objectives.

It is sometimes argued that many public expenditures, while not commercially or economically feasible, will generate secondary or non-user benefits sufficient to cover their total cost, plus a rate of return. This is one of the common arguments for subsidization of transportation facilities and services. Some of the non-user benefits include: fuller employment, national unity, and develment of markets.

On the question of subsidies, the N.T.A. states that each mode receive compensation for imposed public services and facilities. The thesis examines if, in fact, the subsidies now being paid are for imposed public services or for other purposes.

Inter-Government Grants

This is an internal government process used to stimulate provincial and municipal expenditure on transportation facilities falling within their respective jurisdictions. Nothing else will be said of inter-government grants since the end result of these grants is examined under "Government Provided Facilities and Services" in the discussion of each mode.

Research

Most of the transportation policy research is conducted by the newly created Transportation Development Agency. In addition, yearly awards are made to universities and industries for transportation research. Unfortunately, these expenditures are not made from the transportation budget. The set-up of the Public Accounts makes it extremely difficult for these expenditures to be located. The only thing which can be said is that these research and development costs should also be borne by the relevant mode.

CHAPTER III

TRANSPORTATION BY RAIL

History[1]

In 1827, the first railway in Canada was built at Pictou, Nova Scotia, for the purpose of hauling coal from a mine. At about the same time, there was some public interest shown in constructing a railway from St. Andrew's, New Brunswick to Quebec City to convey the trade of the St. Lawrence to the Atlantic waters in a single day. The British government granted £10,000 to be used in surveying the route. However, due to strong opposition from the U.S. over the boundary, orders were then given to cease all work on the project until the international boundary was settled.

In 1832, a charter was granted to the Company of Proprietors of the Champlain and St. Lawrence Railroad. This charter is of particular interest since it contained in the Act of Incorporation, the rates for both freight and passengers. The maximum rates were set at 2s4d for passengers and 7s5d per ton of freight per mile with the additional stipulation that if the dividends on the railway exceeded twelve percent, the rates were to be correspondingly reduced.

---

[1] This section partially relies on the book, Our Transportation Services, by the Department of Citizenship and Immigration, (Ottawa: Queen's Printer, 1954).

In 1846, there was a total of 22 miles of railway in Canada, but public interest was mounting. In that year, a survey of the route of a proposed railway from Halifax to Quebec was started; the charter of the Cobourg railway was renewed; and the construction of the Lachine portage railway was begun. Up until 1849, some 34 charters had been issued for railways in Upper and Lower Canada alone; however, this chartering was rarely followed by any concrete action because of a lack of funds. It was not long before the fact was recognized that only small portions of railway systems would be built unless government aid was provided.

In 1849, provisions were made for this aid. The Guarantee Act was passed which guaranteed interest at six percent on a sum not exceeding one-half the bonded debt of any railway that was over 75 miles long and one-half of which was already constructed. In the ten years following the passing of this Act, the railways increased from 66 miles to 2,265 miles.

The Municipal Act (1849) also aided the cause of the railway by permitting municipalities to take stock in, or lend money to, road and bridge companies. At the same time, legislation authorized the formation of joint stock companies for the construction of roads and other works in Upper Canada. As a consequence of these two pieces of legislation, construction was begun on the Great Western Railway which had originally been chartered in 1834 under a different name.

In 1852, a charter was issued to the Grand Trunk Railway. This charter marked the beginning of a large scale building program and eventually led to the amalgamation of the Quebec and Richmond, and St. Lawrence and Atlantic, the Grant Junction and the Toronto and Guelph in 1853.

At about the same time, construction began on the European and North American Railway on the east coast of Canada, with the proposed line running from Portland, Maine, to Halifax, Nova Scotia. The province of New Brunswick contracted to have their portion of the line built by a private firm with the government taking ±250,000 of stock and lending ± 1,800 per mile secured by a first mortgage. In Nova Scotia, the province favored public ownership. Work on the railways in both provinces came to a stop because of financial difficulties. Thus, the first case of public ownership was short-lived.

In the mid-1850's a number of railways were facing financial difficulties. In 1856, the Canadian Northern (Railway) defaulted on its payment of the government interest. By 1859, the track and rolling stock were in such run-down condition that the government found it necessary to spend $60,000 in order to put the line back in shape.

As late as 1860, the railroad proposed from New Brunswick to Quebec City in 1836 had still not been built. Meanwhile, each of the provinces had carried on some railway construction. All that remained to be done was to connect the existing lines. The American Civil War provided an excuse to appeal for financial aid, and, at last, the loan for an Intercolonial railway was

guaranteed in 1865. However, in 1867, when Confederation was accomplished, the rail link had not been made. Thus, one of the conditions of Confederation was the construction of a railway between the provinces.

In 1868, the route of the proposed Intercolonial railway through the provinces was finally settled and commissioners were appointed to manage its construction. By 1872, work was progressing. In the same year, an Order-in-Council brought about the reconstruction of the railways in Nova Scotia and New Brunswick and renamed them the Intercolonial Railway, which was publicly owned.

In 1871, British Columbia was admitted to Confederation, with one of the conditions again being that the government undertake, within two years from the date of the Union, the construction of a railway connecting the seaboard of British Columbia with the railway system of Canada; and, further, to secure the completion of such a railway within ten years from the date of the Union. In 1874, construction on the transcontinental railway actually began.

In May 1879, the Federal government established the Department of Railways and Canals with its own minister. From that time on, government activity in the field of railway development increased substantially.

November 7, 1885 marked the completion of the transcontinental railway--the longest railway in the world was now open from coast to coast.

Twenty years after Confederation, there were 11,691 miles of railway in operation in Canada. However, it was not long after the completion of the Canadian Pacific (the first transcontinental railway) that a second railway was

being considered. The first action to provide a second transcontinental railway was taken in 1896.

By the end of the 19th century, there were 17,481 miles of railway in Canada. Rapid expansion of the railways and the need for control over transportation finally brought about the government appointment of the Board of Railway Commissioners in 1904. This board assumed jurisdiction over all matters relating to the location, construction and general operation of railways, including rate control which was previously done by the Railway Committee of the Privy Council.

By 1915, Canada had two transcontinental railways--the Canadian Pacific and the Grand Trunk Pacific, both privately owned, and a total of 35,582 miles of railway in operation. At this time, several railways were facing financial difficulties, mainly caused by over-expansion. The federal government was asked to pay bond interest and, the following year, there was a further loan of $15 million. Under these circumstances, the government had little choice but to appoint a commission to investigate the railway problem in Canada and advise the government on what action was necessary to meet the situation.

The Commission recommended that the Canadian Northern, the Grand Trunk and the Grand Trunk Pacific be turned over to the people of Canada, since all three lines had operated largely with government funds. Another recommendation was made that the government create a permanent board of trustees in which ownership of these railways would be vested and which would operate them.

Shortly thereafter, the government passed the Canadian National Railways Act which made provision for the operation and management of government railways by the Canadian National Railways Board. In 1923, an Order-in-Council passed the management and operation of all government railways to the Canadian National Railways.

This meant that the publicly-owned Canadian National Railways and privately-owned Canadian Pacific controlled 95 percent of all the railway mileage which then amounted to some 36,000 miles. The Board of Railway Commissioners was renamed the Board of Transport Commissioners for Canada in 1938 and its powers were extended to cover transport by water and air as well as by rail.

In 1949, Newfoundland entered into the Confederation and the 705 miles of track were absorbed by the government-owned Canadian National Railways. In the following year, Canada had a total of 57,997 miles of track which was surpassed only by the U.S.A. and the U.S.S.R. Since 1950, the number of miles of track has remained almost static. New track has been added; however, the increases have been offset by old track which has been abandoned.

Rail Transportation Today

Today there are 33 railways in Canada.[1] The breakdown of these railways by class is as follows:

---

[1]Canada, Dominion Bureau of Statistics, Railway Transport Service Bulletin, April, 1971, (Ottawa: Information Canada, 1971).

Table 3-1

Railway Carriers by Class

Number	Class	
2	I	(Transcontinental Railways - CN and CP)
23	II	(Revenue + $500,000 per year)
2	III	(Revenue - $500,000 per year)
6	IV	(Terminal bridge and tunnel companies)

Source: Canada, Statistics Canada, Railway Transport, 1970.

Of the total railways, Canadian National and Canadian Pacific Railways account for approximately 85 percent of the revenues, tons and ton-miles.

In terms of ton-miles, the railways had 36 percent of the total freight market in 1970.[1] This share of the market is a far cry from the monopolistic position which the railways once had (75 percent in 1945). Today, the railways have to compete vigorously with truck, water and pipeline transportation and, to a lesser degree, with air transportation.

Canadian National Railways

The government-owned Canadian National is the country's largest public utility and operates the greatest length of trackage in Canada and, in fact, the second largest on the North American continent. It serves all ten provinces, the

[1] Canada, Dominion Bureau of Statistics, Transportation Service Bulletin, March 1970. (Ottawa: Queen's Printer, 1970).

Great Slave Lake area of the Northwest Territories, as well as parts of ten States. In addition, it operates a highway transport service, a fleet of coastal steamships, a chain of hotels, and a telecommunication service. The Canadian National accounts for approximately 50 percent of the total rail revenues in Canada.

Canadian National's present financial situation can be easily explained by examining its financial picture at the time of creation. The Canadian National Railway System came about by a succession of government steps between 1917 and 1923, which brought together four financially troubled railways. By these steps, the federal government, through nationalization, assumed the debts of the insolvent companies. At the time of consolidation, the annual operating loss was close to $12 million.

Additional expenditures were required in order to bring the C.N.R. up to a reasonable degree of operating efficiency. Funds for these expenditures could only be obtained by government loans which increased the fixed costs (interest charges) once again. In fact, all monies provided by the government took the form of interest-paying loans.

In 1937, the C.N.R. Capital Revision Act was passed which cancelled the railways indebtedness insofar as its operating deficits and unpaid interest were concerned. (The same Act also cancelled common stock held by the government in two privately-owned companies). The Act did give the railway

the right to convert the interest bearing government loans for improvements and betterments to common stock.

In 1950, the C.N.R. presented a case to the Royal Commission on Transportation for a complete translation of its debts into equity capital. Two years later, an act was passed which provided for conversion of one-half of the interest bearing debt into non-cumulative preferred stock and for ten years C.N.R. was relieved of paying interest on $100 million of its long-term debt. This reduced the fixed charges from $48 million in 1951 to $25 million in 1952. By 1971, the net interest on fixed charges had crept up to $68.5 million.

Since the C.N.R. is government-owned, the annual deficit is paid for by the government. The losses over the last several years are summarized in Table 3-2.

Table 3-2

Canadian National Railways Losses

Year	Amount of Loss
1960	$ 67.4 million
1961	67.3
1962	48.9 "
1963	43.0 "
1964	38.7 "
1965	33.4 "
1966	24.5 "
1967	35.8 "
1968	29.1 "
1969	24.6 "
1970	29.7 "
1971	24.2 "
1972	17.8 "

Source: Canadian National Railways, Annual Report, 1972, Montreal, 1972, p. 50.

Canadian Pacific Limited

The Canadian Pacific Railway is a stock corporation operating a railroad in eight provinces. CPR accounts for approximately 35 percent of the revenues. In addition to its operation of the second largest railway, it operates a domestic truck network, a fleet of inland, coastal and ocean-going vessels, a chain of hotels which recently has expanded internationally, a telecommunications network and a domestic and international airline service, and numerous non-transportation related activities. "Today, the CPR is the largest privately-owned transportation company in the world and the largest privately-owned railway outside the United States."[1]

Regulation of Rail Transportation

The federal government has jurisdiction over railways operating beyond the boundaries of a single province and over foreign railways operating over Canadian lines.

Entry and Service Control

A 1970 amendment to the Canada Corporations Acts changed the requirements for incorporation of railway companies. Special acts of Parliament are no

---

[1] H.L. Purdy, Transport in Canada: Competition and Public Policy, (Vancouver: University of British Columbia Press, 1972), p. 118.

longer required for incorporation. Instead, the Minister of Consumer and Corporate Affairs may incorporate a company, but letters patent can only be issued upon the Canadian Transport Commission's issuance of a certificate of public convenience and necessity. In order to determine whether the proposed company is and will be required by reason of present and public convenience and necessity, the Canadian Transport Commission (CTC) is directed to take into account:

(a) the economic feasibility,

(b) the financial responsibility of the applicant, the proposed methods of finance, including the extent of Canadian participation in financing, and

(c) public interest.

Withdrawal from established services, or branch line abandonments as they are commonly called, is also under its jurisdiction. Applications must be made to the CTC, which then holds public hearings to determine whether the withdrawal is in the public interest. The Canadian Transport Commission has the power to permit or refuse the withdrawal. If the application is refused, the Treasury will pay 80 percent of the loss.

The Commission may also regulate train schedules in the interests of shippers' convenience.

Rate Control

One of the recommendations of the MacPherson Royal Commission which was incorporated in the National Transportation Act was that management should be given a large degree of freedom to set rates. The only major constraint on setting rates was that the rates must fall within a prescribed range, the lower bound being that rate which would not unduly restrict competition and the upper bound being that rate which would not take advantage of a monopoly situation. In cases where rates are outside these minimum and maximum criteria, the tariff can be disallowed and a new tariff prescribed by the Board.

However, statutory rates (rates set by statutes of Parliament), At-and-East grain rates, and Maritime Freight Rates--both of which are described later in this chapter--are exempt from the minimum and maximum rate controls.

Both the Railway Act and the National Transportation Act require carriers to publish tariffs. Increases in published tariffs must be filed 30 days before they are to take effect, but decreases can be instituted immediately.

Ownership of Facilities

Vehicles. The basic vehicles for railway transportation include locomotives and freight cars. The costs of these vehicles are borne by several different groups, although basically by the carrier. The major exception to carrier ownership is "tank cars." According to freight tariffs, the railways are not responsible for supplying tank cars. These are supplied by the shippers or by leasing

companies. Another exception includes 2,000 gondola cars which were bought by the federal government for the transportation of grain.

Table 3-3

Railway Rolling Stock in Operation
as at December 31, 1970

Type	Number of Units
Locomotives	3,417
Steam	-
Diesel-electric	3,399
Electric	18
Freight Cars	188,737
Privately-Owned Cars	16,211
Tank	14,957
Other	1,254

Source: Canada, Statistics Canada, Canada Year Book, 1972, p. 876.

Right-of-Way and Roadbed. The railway right-of-way consists of land and tracks. Years ago, much of the land was given to the railways free of charge because of the huge capital expenditures required and as an incentive to development. Today, most of the railway building is over. In the period from 1966 to 1970, the total number of miles for all classes of track increased from 58,300 to 59,629 miles.[1] The few hundred miles of right-of-way required each year are purchased outright.

[1] Canada, Statistics Canada, Canada Year Book, 1972, p. 875.

Terminals. The actual origin and destination in the case of most carload traffic is the customer's own premises in which the carrier has no financial interest. However, loading/unloading or transfer facilities are required for less than carload (LCL) traffic and for carload traffic where the shipper has no private tracks. These latter facilities are provided by the carrier.

Net Government Expenditure on Rail Transportation (excluding subsidies)

An analysis of the ownership of railway transportation facilities shows that the only government investment in railway facilities since 1960-61 has been the purchase of 2,000 covered hopper cars in the year 1971-72. However, since the government does finance Canadian National's deficits, these expenditures have been added to net government expenditures on railway transportation facilities which is shown in Table 3-4, on the following page.

Subsidies

There are presently six rail subsidies, of which four are rate subsidies:

1. General Freight Rate Subsidy,
2. Maritime Freight Rates Subsidy,
3. Atlantic and Eastern Ports ("At-and-East") Export Grain Subsidy,
4. Feed Grain Subsidy,
5. Railroad Crossing Subsidy,
6. Pension and Miscellaneous.

Table 3-4

Net Government Expenditure on Rail Transportation Facilities

(Millions)

Year	Expenditure
1960-61	$67.4
61-62	67.3
62-63	48.9
63-64	43.0
64-65	38.7
65-66	33.4
66-67	24.5
67-68	35.8
68-69	29.1
69-70	24.6
70-71	29.7
71-72	64.2
72-73	17.8

[1] Expenditure comprised of Canadian National deficits except for the year 1971-72 when $40 million is included for the purchase of 2,000 covered hoppers.

Source: Canadian National Railways, Annual Report, 1972, p. 50.

Each subsidy is discussed separately below. Estimated expenditures for each subsidy in 1972-73 appearing after the name of the subsidy at the beginning of each discussion indicate the relative importance of the subsidy.

General Freight Rate Subsidy (26 million, 1972-73). In 1958, the railways applied for a general rate increase, based on wage awards amounting to $65 million for CN and CP. It was found that a 17 percent increase in freight rates on competitive traffic was required in order to meet the wage costs. The

federal government interceded and provided $20 million under the Freight Rates Reduction Act. The rate increase was thus "rolled back" to 10 percent. The $20 million subsidy of 1959 continued to increase in subsequent years until 1967 when $110 million was provided.

However, in that year the just-passed National Transportation Act reflected a different philosophy. For each year thereafter, payments were to diminish by $14 million through 1973, leaving a $12 million reduction for 1974. The General Freight Rate Subsidy was to be replaced by specific payments for uneconomic branch lines and uneconomic passenger services.

Maritime Freight Rates Subsidy ($23.3 million, 1972-73). In 1925 the Duncan Royal Commission on Transportation was set up to examine widespread discontent in the Maritimes about the lack of economic advantages being gained from their union with Canada. Since 1912, freight rates had increased materially, especially when compared to increases in the rest of Canada. Part of the discontent stemmed from the fact that the tracks to the Maritimes had been laid in a circuituous manner for strategic reasons and this circuity led to high transportation charges.

To enable industries in the Atlantic provinces to compete on a more equitable basis with industries in other parts of Canada, the federal government has subsidized railway companies for moving specified traffic over designated eastern lines. Under the Maritime Freight Rates Act, freight traffic moving locally between points in the area and for export shipments from the area through

Atlantic ports are accorded a reduction of 30 percent for the portion of the haul within the designated area.

"At-and-East" Subsidy ($2.0 million, 1972-73). In 1960, the railways applied for increases on bulk grain for export moving from points on the Great Lakes to eastern export points in Canada commonly referred to as Atlantic and Eastern ports (At-and-East). The Board of Transport Commissioners recognized that the existing rates were non-compensatory and allowed a partial increase. However, an Order-in-Council suspended the increase before it came into effect and provided for a subsidy equal to the Commission-approved increase. The reason for this subsidization was to prevent export grain movements from moving through U.S. ports. The cost of this "national interest" is approximately $2 million per year.

Feed Grain Subsidy ($20 million, 1972-73). The original purpose of the Feed Grain Subsidy was to act as a price control during the Second World War. Originally, the subsidy applied to rail traffic only, and later included both rail and water movements. In 1964, the subsidy was also made available to road carriers.

Railway Grade Crossing Fund ($20 million, 1972-73). Under the Railway Act of 1809, this fund was set up to provide financial aid for the construction of safety and convenience devices which aid the public wherever highways crossed a railway at rail level. Now, crossings at grade level, reconstruction and improvements of grade separations, relocation of public

utility facilities and the placing of reflective marking on railway cars, are eligible for assistance.

Pension Subsidies ($8 million, 1972-73). Supplemental pensions are paid to former employees of the Intercolonial and Prince Edward Island Railway and the Newfoundland Railways, both of which were absorbed in the C.N.R. system.

Expenditure on Rail Subsidies

Table 3-5 shows the total cost of the rail subsidies just described from 1960-61 to the present. Only federal government costs are shown since no expenditures are made by the provincial governments. The table shows that total subsidies have been decreasing since the implementation of the National Transportation Act of 1967. (Table 3-5 follows on next page.)

Summary

In this chapter, it has been shown that the railway industry is made up of a very small number of firms with two companies: the government-owned Canadian National and the privately-owned Canadian Pacific, accounting for approximately 85 percent of the railway traffic. Entry and Service Controls follow the fairly standard criteria of "public convenience and necessity" and "public interest." Withdrawal from service is also regulated. Rate Control for the railways takes the form of minimum and maximum rates based on a cost-plus formula with all the components of the costs being explicitly detailed by the

Table 3-5

Government Expenditure on Rail Subsidies

(Millions)

Year	Expenditure
1960-61	$112.0
61-62	115.5
62-63	129.1
63-64	133.5
64-65	148.0
65-66	152.0
66-67	169.7
67-68	183.9
68-69	147.7
69-70	146.3
70-71	133.3
71-72	123.0
72-73	99.3 (E)

E - Estimate

Source: Canada, Department of Finance, Public Accounts of Canada. Canadian Tax Foundation, The National Finances.

government so as to allow little room for interpretation. Several exceptions are made to the minimum and maximum rate controls, namely, statutory rates, export grain and flour rates, and Maritime Freight Rates.

Current government investment in railways is limited to 2,000 gondola cars purchased for the movement of grain. In addition, the government underwrites the losses of Canadian National. These losses have continued to decrease since the implementation of the Act as is indicated in Table 3-2.

The National Transportation Act contained specific legislation to reduce the general subsidies paid to the railways. This subsidy reduction program has been adhered to with the result that the subsidies have decreased since the implementation of the N.T.A., as is shown in Table 3-5. One exception is noted to the policy statement regarding subsidies, and that is that branch line abandonment subsidies are only for 80 percent of the loss.

CHAPTER IV

TRANSPORTATION BY ROAD

History[1]

When the first explorers reached Canadian shores, there were no roads. The native Indians travelled almost entirely by water. The white man also turned to water transportation in summer and to foot-travel in winter.

The first road in Canada was built in the Maritimes in 1606. It was purely a military road and only ten miles long. During the early settlement days, there was not a great necessity for roads since there were few horses or wheeled vehicles.

The initial roads were constructed and maintained by the inhabitants themselves. This meant that when a new road was constructed, the inhabitants would have to supply a given number of days of work. The settlers had to maintain the road in front of their own land in a state of repair as one of their obligations to the King. The duty was never arduous since the system of holding land was such that the frontage along the road was seldom large. Moreover, the inhabitant could be relieved of his obligation by payment of a small sum of money. Refusal to do the work led to a fine and the money raised was used to pay for having the work done.

---

[1] Department of Citizenship and Immigration, Our Transportation Services.

The inhabitants had additional duties during the winter. They were required to mark the road with poles or small cedars at regular intervals so that travellers would not miss the road in the deep snow. In addition, they were required to keep the snow beaten down and remove drifts and ruts.

Despite the good intentions of the law, the system of roads was in poor condition. This was partially due to the original construction which involved little more than clearing the roadway. Water turned the roads into knee-deep mud for months at a time, and pitted the surface. Natural rotting made wood bridges dangerous after only a few years. The roads remained in poor condition well into the 1800's.

In 1804, the first government appropriation for roads was made. A year later, another new method of financing was found. A group of people formed a "turnpike trust" which agreed to build and maintain certain roads. In return, the trust was empowered to collect tolls from all travellers who used their roads. However, it was inevitable that many turnpike trusts should regard the revenue thus acquired as profits to be pocketed, while the condition of the turnpikes became worse and worse for lack of maintenance.

In 1806, still another method of road-building and financing was attempted. The government called for tenders for the construction of specific roads. The contractors were paid by grants of land lying along the roads which they could sell as the roads opened the regions to settlement. As the roads improved,

various commercial vehicles, such as the "stage" were introduced for passenger, freight, and mail.

In the 1830's, two revolutionary changes in road-building occurred. A plank road was built. The planks, which were plentiful, were laid cross-wise with little skill being required. A type of hard-surfacing called "macadam," which had been developed in England, was also introduced in Canada.

With the growth of better roads, stage services improved significantly. However, in 1856, the first railway train made its appearance. From that time on, travel by road over long distances became less and less attractive. The rapid expansion of the railways in the next 25 years did much to turn public attention away from roads and road-building. The highways retained their importance as connecting links between local communities but for long journeys between major centres, the railway was supreme.

About the time the railways began to exert an influence on land travel in the East, events in Western Canada brought about the need for roads in these vast new areas. Land travel on the Prairies changed drastically as a result of the Red River cart. This was a small, low cart, the wheels of which were one solid piece sawed from the ends of trees whose diameter was approximately three feet.

With the Confederation of Canada in 1867, the newly formed federal government accepted the responsibility for some of the major connecting roads. Immediate steps were taken to complete and maintain them.

In the 1870's and 1880's, land travel on the Prairies followed much the same course as it had in the eastern provinces a few decades earlier. Stage coaches were introduced and gained rapid popularity until the appearance of the railways.

In 1896, the first motor car appeared in the streets of Toronto. Soon, more and more motor cars appeared and the public began to demand better roads. The motor car brought about a reassessment of the provincial role of highway construction. Ontario was the first province to take action.

In 1901, the Highway Improvement Act was passed in Ontario which provided the sum of one million dollars per year. In 1913, Ontario established the Highway Department with its own minister. The government was empowered to take over any highway and to assume sole responsibility for construction and upkeep. This was gradually done. Other provinces soon followed suit.

The federal government also increased its participation in road construction. The Canada Highways Act in 1919 authorized the expenditure of $20 million on the construction and improvement of roads over a five-year period. Grants from this fund were made to each of the provinces. By 1921, commercial trucking was being recognized for transportation of less than carload lots where adequate highways existed.

The federal government entered the field of highway construction directly in 1931, when it began to build a Trans-Canada Highway. However,

it was not until 1949 that Parliament passed the Trans-Canada Highway Act which permitted the completion of the coast-to-coast network.

In 1950, a nation-wide railway strike took place. The strike provided truckers with a unique opportunity in which to demonstrate their capabilities in the long-haul market. A number of trucking companies were able to establish themselves and retain the traffic after the end of the strike. So began an era of fierce truck and rail competition for the freight market.

Road Transportation Today

Literally thousands of small firms are engaged in road transportation. The basic producing unit is the truck. The useful life of these units is relatively short. Capital requirements, to begin business, are small and overhead expenses are low, relative to total expenses. Operating costs constitute by far the biggest segment of costs, often in excess of 95 percent. Because of the characteristics of the industry, economies of scale are not great. Also, firms can adjust quite rapidly to changing levels of demand due to the low cost and short life of the production unit.

Road transportation accounts for only nine percent of the total ton-miles. In 1970, the road carriers were broken down as follows:

Table 4-1

Contract and Common Carriers

No.	Class	Revenue per Carrier
286	I	(+ $500,000)
612	II	($100,000 - 499,999)
1,400 (app.)	III	($20,000 - 99,000)
1,700 (app.)	IV	- $20,000

Source: Canada, Dominion Bureau of Statistics, Motor Carriers - Freight Quarterly, 1970, (Ottawa: Queen's Printer, 1970), p. 8.

Due to the large numbers of carriers and the lack of federal control, accurate statistics are unavailable for Classes III and IV.

The government-owned Canadian National and the privately-owned CP, each own several large trucking subsidiaries. The CP subsidiaries comprise "North America's third largest trucking organization operating on some 21,000 miles of truck routes."[1]

Regulations of Road Transportation

Under the British North America Act, the provinces have jurisdiction over intra-provincial trucking activities and the federal government has

[1] Purdy, op. cit., p. 118.

jurisdiction over inter-provincial and international trucking activities commonly referred to as extra-provincial activities. However, the federal government was reluctant to exercise its jurisdiction over extra-provincial trucking so the administration was turned over to the existing provincially appointed boards which supervise intra-provincial trucking. In the event that the federal government should decide to invoke its authority in matters of extra-provincial trucking, numerous provisions for its regulation are made in the National Transportation Act of 1967.

Entry and Service Control

Regulation of admission to the trucking industry basically applies to "for hire" carriers. All the provinces require that "for hire" carriers obtain a license before starting or expanding services. These licenses provide the carrier with operating privileges over the routes specified in the certificate. In order to obtain a license, the applicant must demonstrate that the potential volume of business is large enough to cover his normal operating costs and that the service is required for "public convenience and necessity."

The applicant must also prove that he has the necessary capital to accept financial responsibility. He must show that he has had some experience in highway operations and, usually, that he is prepared to adhere to a reasonably definite schedule of services.

The issuance of a certificate does not give the carrier exclusive operating rights over a given route. Should other carriers present a convincing case

for issuance of another certificate, the province is free to issue additional certificates. Certificates are also revocable if the conditions of the certificates are not met.

One constant threat which many "for hire" road carriers constantly face is the shippers' ability to engage contract carriers or even use their own trucks.

Rate Control

The various provinces have different degrees of regulation on intra-provincial trucking; however, two requirements are universal:

(1) tariffs must be filed with the provincial regulatory agency, and

(2) the tariffs must be adhered to in all cases.

In addition, British Columbia requires "just and uniform" rates; Manitoba requires "reasonable maximum rates;" and Quebec requires "fair and reasonable" rates. The other provinces generally do not provide any further rate guidelines.

The National Transportation Act, Section 33, requires extra-provincial carriers to file tariffs with the Canadian Transportation Commission which are:

(1) compensatory, and

(2) do not take advantage of a monopoly situation.

The federal government has the authority to require rates to fall between minimum and maximum rates established in the N.T.A.; however, the federal

government has temporarily surrendered its power in this area through the Federal Motor Vehicles Act which empowers provincial traffic boards to determine or regulate "the tariffs and tolls to be charged by a federal carrier for extra-provincial transportation in that province . . . in the like manner and subject to the like terms and conditions as if the extra-provincial transport in that province were local transport."

Ownership of Facilities

Vehicles. Numerous types of trucks, tractors and trailers comprise the fleet of vehicles for road transportation. In recent years, these vehicles have become very specialized in order to penetrate new markets and reduce costs. "For hire" carriers either own or lease their equipment.

Right-of-Way. The right-of-way consists of the highways and streets, the land on which they are located, and the signs and signals along the routes. All of these facilities are owned and maintained by various levels of government--municipal, provincial, and federal.

As of the end of 1969, there were 318,255 miles of federal and provincial roads and 199,932 miles of municipal roads.[1]

Table 4-2 gives a breakdown of the expenditures for the construction, maintenance and administration of highways and streets by province (page 47).

---

[1] Canada, Statistics Canada, Canada Year Book, 1972, p. 890.

in the second column of the same table, the total revenues from the various provinces are also shown. Revenues are derived from vehicle registrations and motive fuel taxes.

At the federal level, six departments are involved in highways and highway-related programs:

1. Ministry of Transport - MoT,
2. Department of Regional Economic Expansion - DREE,
3. Department of Indian Affairs and Northern Development - DIAND,
4. Department of Public Works - DPW,
5. Department of Energy, Mines and Resources - DEMR,
6. Department of National Defence - DND.

The first three departments: MoT, DREE, and DIAND, are active in policy formulation and implementation, while the DPW is phasing out its policy role and concentrating on the role as engineering consultant to all federal departments.[1]

- Ministry of Transport

Five components of the Ministry of Transport are involved in highway transportation:

---

[1] Canada, Transportation Development Agency, Canadian Highway Systems Study: Federal Interest in Highways: An Historical Perspective, (Montreal, 1972), p. 1.

Table 4-2

Highway Revenue and Expenses, By Province

Province	(1969) Expenses[1] (thousands)	Revenues[2] (thousands)
Newfoundland	$ 54,099	$ 23,478
Prince Edward Island	14,035	6,297
Nova Scotia	76,408	41,257
New Brunswick	58,446	34,291
Quebec	392,710	350,417
Ontario	641,127	509,030
Manitoba	68,555	55,215
Saskatchewan	106,049	60,742
Alberta	136,842	92,393
British Columbia	162,683	101,457
Yukon & Northwest Territories	26,477	3,402
	$1,737,721	$1,277,984

[1] Expenses are for all construction and maintenance of all roads, streets, bridges, and ferries of all levels of government.

[2] Revenues are received from provincial fuel taxes and vehicle registration taxes. (No federal or municipal revenues are directly related to highway use).

Source: Canada, Statistics Canada, Canada Year Book, 1972, (Ottawa: Information Canada, 1972), pp. 891, 893.

1. The Canadian Surface Transportation Administration has, as its objective, "on a cost-recoverable basis to the maximum practicable extent, to support and provide safe and efficient facilities and services for surface transportation." The CSTA is sub-divided into the Highway branch and the Marine and Ferries branch. The Highway branch is responsible for development of federal policy alternatives in regard to highway and bridge development and the implementation of the policy selected.

2. The Canadian Marine Transportation Administration is involved in highways and bridges through the National Harbours Board which operates two bridges and the Canals Division of the Marine Works branch which administers and operates 85 federally-owned bridges over canals.

3. The Canadian Air Transport Administration is involved in the provisions of public roads providing access to airports.

4. The Canadian Transport Commission is involved in highways through the administration of the Railway Crossing Fund which provides aid for construction work for the protection, safety and convenience of the public in respect to highway crossings at rail level.

5. The Transportation Development Agency is involved in research and development of all areas of transportation.

- Department of Regional Economic Expansion - DREE

DREE's involvement in highway programs comes about through its involvement in specific programs involving efforts to overcome regional economic

disparities. These projects include:

(a) Prairie Farm Rehabilitation Act - This project involves road projects related to water conservation.

(b) Fund for Rural Economic Development - This fund provides a means of financing and carrying out certain comprehensive rural area development programs.

(c) Special Area Agreements - This grant provides funds for highway construction in the Atlantic provinces.

- Department of Indian Affairs and Northern Development - DIAND

DIAND is concerned with the provision of highways within and to the Indian and Eskimo lands and a variety of roads within and to the National Parks.

- Department of Public Works - DPW

The DPW is responsible for the construction and maintenance of wharves, piers, roads and bridges and the improvement of harbours and navigable channels. In addition, it has shared responsibility with the provinces or other federal departments for highways where federal interests are important, such as the Trans-Canada Highway, Alaska Highway, and the Gaspe Highway. The total federal commitments in the Trans-Canada Highway as of December 31, 1970, were $825 million.

The DPW also is involved in the maintenance of inter-provincial and international bridges.

- Department of Energy, Mines and Resources - DEMR

In the past, the DEMR provided assistance for access roads to mineral and energy resources.

- Department of National Defence - DND

The DND is concerned with construction and maintenance of roads within and to Canadian Forces Bases.

Terminals. Some carriers, operating only a few trucks, transport goods from the origin to the destination without intermediate handling facilities. However, the larger carriers, who are operating between numerous centres, are required to consolidate and sort loads at an intermediate point. For this process, the carrier requires handling facilities. These handling facilities are owned by the carrier.

Net Government Expenditures on Road Transportation (excluding subsidies)

Table 4-3 (page 51) shows the history of net government expenditures on road transportation facilities from 1960-61 to 1970-71 by all levels of government (local, provincial and federal). Estimates are not available for 1971-72 and 1972-73 because of the sheer volume of collecting data from the thousands of municipalities. Also, because of the large amount of use of the road system by private automobiles for which data are unavailable, no expenditure-per-ton-mile statistics can be calculated with any reliability.

Table 4-3

Net Government Expenditure on Road Transportation Facilities

(Millions)

Year	Expenditure[1]
1960-61	$499.1
61-62	365.8
62-63	366.3
63-64	471.3
64-65	552.1
65-66	668.4
66-67	781.9
67-68	664.6
68-69	565.4
69-70	574.5
70-71	634.5
71-72	N/A
72-73	N/A

N/A - Not available

[1] Federal, provincial and municipal expenditure for the provision and maintenance of all road properties, less revenues from provincial fuel taxes and registrations.

Source: Canada, Statistics Canada, Road and Street Mileage and Expenditure, 1970, (Ottawa: Information Canada, 1972).

Subsidies

In 1969 the Atlantic Region Freight Assistance Act extended to commercial truck and railway express companies the 30 percent subsidy on carload freight which had been given to the railways under the Maritimes Freight Rates Act. The

purpose of this subsidy was to reduce the costs of shipments for shippers from the Atlantic provinces.

A year later, another freight subsidy went into effect for truck shipments within the Atlantic region and southeastern Quebec. Subsidies were also provided to reduce truck ferry rates from St. John's and Corner Brook to Montreal and between eastern Newfoundland and Halifax.

An amount of $10.2 million has been budgeted for 1973 under the Atlantic Region Freight Assistance Act. This $10.2 million includes payment to both railways and trucking companies. No breakdown is available between railways and trucking companies.

Summary

The "for hire" trucking industry in Canada consists of thousands of various sized firms ranging from one truck upwards. Each province regulates trucking firms operating within its boundaries. Operating licenses are required for each route or territory. Inter-provincial routes must be licensed by all provinces through which the route passes. In order to obtain a license, applicants must show "public convenience and necessity" or "public interest." Truckers can withdraw services at their own discretion. Rate control only requires the filing of tariffs and adherence to the filed tariffs. Some provinces also have rate controls which require "just," reasonable," or "fair" rates.

Government investment in this mode covers all the right-of-way facilities, i.e., the highways and streets. Expenditures by federal, provincial and municipal governments are partially off-set by revenues from licensing of vehicles and fuel taxes. However, there is still a substantial net expenditure.

Before 1969, there were no known subsidies to road carriers. However, in that year, the Maritimes Freight Rates Act was extended to the trucking industry. Statistics are kept only of the expenditure under the Act and not of the breakdown between modes.

CHAPTER V

TRANSPORTATION BY WATER

History[1]

From the time Jacques Cartier discovered Canada, until approximately the mid-18th century, water transportation was the only commercial means of transportation. Sailing ships would arrive from the ports of the mother country and go up the St. Lawrence River as far as Quebec City, Trois Rivieres and Montreal. From there, birch bark canoes provided further transportation to the interior of the country. The importance of the waterways is illustrated by the fact that the majority of forts, trading posts and settlements were situated at strategic points overlooking the major waterways and junction points.

The importance of water transportation was quickly recognized and shipyards were established. In 1663, the first ship was launched at Quebec City. Many of the ships built in the colonies were subsidized by the King of France. By the end of the early 1700's, it was realized that the waterways had to be improved. Thus, a number of small locks and canals were built around the worst parts of the rapids.

---

[1] Department of Citizenship and Immigration, Our Transportation Services.

In 1809, the first steamboat was introduced in Canada on the St. Lawrence Seaway. Within two decades, there were numerous steamships making scheduled runs. The vast increase in the amount of shipping on the St. Lawrence River and the lower lakes, coupled with the increased size of vessels and the introduction of the steamboat, made some action to overcome the rapids a vital necessity. As a result, in 1804 the existing locks and canals were enlarged and improved by the Royal Engineers. In 1824, a company was formed to undertake the construction of the Welland Canal between Lake Ontario and Lake Erie and in 1829 the canal was completed. During this period, the canals and locks were financed by the British and Canadian governments.

During the next few years, several other canals were completed, such as the Lachine Canal in Quebec, with seven locks and a depth of four-and-one-half feet; the Shubenecadie Canal between Halifax and the Bay of Fundy; and the Rideau Canal. The period of canal construction lasted until almost the 1900's.

As early as 1832, steamships established regular schedules between Prince Edward Island and the mainland. Water still provided the main transportation routes, with stage-lines operating only in the winter when navigation was closed. Water transportation had to cease from approximately November to the end of April because of ice. Only the ocean ports remained open all year.

By the late 1800's, the construction of railways had brought a serious challenge to both steamships and schooners. Undoubtedly, the railways

hastened the doom of the sailing ships which were so dependent on wind and weather. As a result of the railways' competition, water carriers began to compete vigorously. This competition led to a decrease in both passenger fares and freight rates.

In 1867 Confederation united the provinces. Under the British North America Act, the new federal government was granted the power to control all matters relating to navigation.

In the 1870's and 1880's, world shipping firms were turning to the steel hull. This change permitted the use of larger ships. So once again, it was necessary to enlarge many of the canals. The Welland Canal, which was 12 feet deep, was deepened in several stages to 30 feet by 1930. Federal funds were used for this project. The use of steel also marked the decline in shipbuilding in Canada and a decline in its ocean fleet due to a lack of steel production.

Despite the competition between water and rail, water carriers increased their volumes of freight. In 1913, traffic through Canadian canals rose to a record peak of 52 million tons, a mark which has never been equalled since that time. After that date, the volume fell off sharply due to the substantial decline in the shipment of iron ore from the Lakehead to Lake Erie ports.

In 1913, a federal charter was given to Canadian Transportation Lines (later Canada Steamship Lines). From this time on, large shipping companies

began operating fleets of vessels on the Great Lakes and St. Lawrence River.

In 1936, the National Harbours Board was established by an Act of Parliament. Under this Act, the management of specific harbours was placed under the direction of the Board, which was responsible to the Minister of Transport.

In 1949, Newfoundland joined Canada. Under the terms of union, the extensive marine services and facilities of the new province were turned over to the administration of the Department of Transport. The ferry services that had been operated by the Newfoundland Railway were taken over by the Canadian National Railways and now receive large subsidies.

The need for development of the St. Lawrence River had been recognized since the turn of the Twentieth Century. A treaty in 1909 established the "International Joint Commission," comprised of both Canadian and American representatives for the express purpose of regulating the development of the River's resources. Ten years later, the Commission was called on to investigate the cost and usefulness of a deep water seaway along the St. Lawrence and to determine its maximum efficiency in terms of both navigation and hydro-electric power. In 1921, after two years of exhaustive hearings, the International Joint Commission recommended a treaty providing for a joint United States-Canada seaway from Montreal to Lake Erie. The proposed treaty was not negotiated until 1932, during the height of the great depression. However, it was not until the early 1950's that a combination of a surging demand for

hydro-electric power and the need for economical bulk transportation of low value commodities such as iron ore, provided the catalyst to kindle determined planning for the massive undertaking. Construction finally began in August 1954 and was completed by April 1959.

Water Transportation Today

In 1970, water carriers handled approximately 26 percent of the ton-miles in Canada.[1] (This figure represents traffic between two Canadian ports, which obviously excludes most ocean transportation). In 1970, this traffic was carried by the following types of carriers:

Table 5-1

Water Carriers, By Class

No.	Class	Revenue per Carrier
70	I	+ $500,000
106	II	$ 50,00 - 500,000
69	III	- $ 50,000
30	Charter	
305	Total	
43	Private	

Source: Canada, Statistics Canada, Water Transportation, 1970, (Ottawa: Information Canada, 1971).

[1] Canada, Statistics Canada, Transportation Service Bulletin, March 1970.

The majority of these vessels are used on the inland water routes, with the few remaining ones being used on coastal services. Although Canada has the world's longest coastline, it has virtually no commercial ocean fleet. (The reason for this is that some under-developed countries, notably Liberia, have declared themselves tax havens.)

Regulation of Water Transportation

As a prerequisite to any discussions on regulations, it should be noted that Canadian law requires that cargo between any two domestic ports be carried by Canadian ships. This law enables the Canadian lake fleet to survive the low-cost foreign competition which has destroyed the country's ocean fleet by rate action.

The basic regulatory document for water transportation is the Transport Act of 1938. This Act is rather limited in scope in that it applies only to

1. passenger traffic on the Great Lakes and MacKenzie River,

2. package freight on the Great Lakes, on ships of 500 tons gross weight or over, and

3. package freight and bulk goods on the MacKenzie River and its tributaries on ships of 10 tons gross weight and over.

Entry and Service Control

All vessels which provide these services require licenses. Section 5 of the Transport Act states:

Before any application for a license is granted for the transport of goods or passengers or both goods and passengers under the provisions of this Act, the Commission shall determine whether public convenience and necessity require such transport, and in so determining, the Commission may take into consideration, inter alia,

> (a) any objection to the application that may be made by any person or persons who are already providing transport facilities, whether by rail or water, on the routes or between the places that the applicant intends to serve, on the ground that suitable facilities are or, if the licence were issued, would be in excess of requirements, or on the ground that any of the conditions of any other transport licence held by the applicant have not been complied with;
>
> (b) whether or not the issue of such licence would tend to develop the complementary rather than the competitive functions of the different forms of transport, if any, involved in such objections;
>
> (c) the general effect on other transport services and any public interest which may be affected by the issue of such licence; and
>
> (d) the quality and permanence of the service to be offered by the applicant and his financial responsibility, including adequate provision for the protection of passengers, shippers and the general public by means of insurance.[1]

The licensee is free to withdraw services provided in its license at any time.

Rate Control

Part III of the Transport Act provides the Water Transport Committee of the Canadian Transport Commission rate control jurisdiction over basically the

---

[1] Canada, Transport Act, R.S.C., 1952, c. 271, Section 5.

same areas as for entry control, namely, package freight on the Great Lakes and package freight and bulk goods on the MacKenzie River.

The Board of Transport Commissioners can disallow any tariffs on these items where they are found to be unreasonable. It can require the carrier to submit acceptable alternatives or it can prescribe maximum tolls.

Package freighters use the same freight classification as the railways. Tolls are set by the Board of Transport Commissioners at a differential below the all-rail rates where transport by water comes between two movements by rail. The reason for this is that railways give faster, more dependable service than water carriers, so the latter have to quote lower rates if they wish to stay in business. The differentials vary between classes. When rail rates are raised, water carriers automatically increase their rates on package freight in order to maintain the set differential.

Ownership of Facilities

Vehicles. Ships and barges are the basic vehicles in water transportation. They are usually owned by the carrier. Exceptions include shipper- or consignee-owned barges. In any case, there is no government ownership.

Right-of-Way. The right-of-way is the waterway. A great deal of capital expenditure has been required to date to build canals and locks which by-pass natural obstructions, such as rapids and falls. In addition, a great deal of maintenance is required to dredge the waterway and maintain navigational aids,

such as buoys, lights, etc. A number of government agencies are involved in the provision and maintenance of these facilities. These agencies, the 1972-73 estimated expenditures and a description of their function follows:

a. The Marine Transportation Program ($126.6m 1972-73)

Four branches of the government are involved in this program: Marine Works, Marine Operations, Marine Regulations, and Marine Hydraulics.

The Marine Works Branch provides and maintains navigation aids on inland waterways, maintains and manages Canada's secondary canals, administers public harbours and wharves, and provides general supervision of harbour commissions.

The Marine Regulations Branch is responsible for administering the Canada Shipping Act which covers the registry of ships and certification of officers. Other responsibilities include ships' inspections, handling of dangerous cargoes, pollution protection and investigation of marine accidents.

The Marine Operations Branch is responsible for operating approximately 90 Coast Guard vessels whose principal duty is to install, service, and supply thousands of navigational aids along the coast. The Coast Guard also provides icebreaking services for commercial vessels.

The Marine Hydraulics branch provides hydraulic engineering studies for all commercial waterways in Canada. It is also responsible for the operations and dredging of the St. Lawrence River below Montreal.

b. Marine Program ($24.0m 1972-73)

The purpose of the Marine Program is to plan and develop channels and harbours facilities, provide pleasure craft facilities and buildings, and improve marine structures.

c. The St. Lawrence Seaway Authority - annual deficit ($18.m 1972-73)

The St. Lawrence Seaway Authority was established by an Act of Parliament as a Crown corporation for the purpose of:

> . . . acquiring lands for and constructing, maintaining and operating all such works as may be necessary to provide and maintain, either wholly in Canada or in conjunction with works undertaken by an appropriate authority in the U.S., a deep waterway between the Port of Montreal and Lake Erie . . .[1]

The Act, incorporating the Seaway, also provided for the collection of user charges which would pay for capital, interest and operating costs over a period of 50 years, based on an estimated traffic level. This traffic level has not been obtained, which has resulted in annual deficits since its beginning in 1959. As of December 31, 1972, government loans to the seaway totalled $672.6 million.[2] This represents an increase in government aid, rather than a decrease.

---

[1] St. Lawrence Seaway Authority, Annual Report, 1958, (Montreal, 1958), p. 5.

[2] Canadian Tax Foundation, The National Finances, p. 259.

Table 5-2

St. Lawrence Seaway Authority Deficits

(Millions)

Year	Montreal-Lake Ontario	Welland
1959	$ 2.1	$ 1.3
1960	7.0	2.9
1961	7.7	3.9
1962	8.4	4.8
1963	7.5	6.2
1964	5.5	8.0
1965	4.1	8.2
1966	3.3	10.1
1967	5.4	8.2
1968	4.6	9.0
1969	8.6	7.9
1970	7.4	8.2
1971	8.1	8.9

Source: St. Lawrence Seaway Authority, Annual Report, 1971, (Montreal, 1971), p. 14.

St. Lawrence Seaway Authority, Annual Report, 1967, (Montreal, 1967), p. 12.

d. Pilotage Authorities ($3.3m 1972-73)

The objective of the pilotage authority is to ensure the safe and orderly passage of Canadian and foreign vessels through Canadian territorial waters assigned to the authorities on a cost-recoverable basis to the maximum practicable extent. Total expenditure: $5.6 million; revenue: $2.3 million.

Terminals. The terminals include the ports, harbours and their related facilities for the interchange of traffic, such as piers and wharves, transit sheds, grain elevators, cold storage warehouses, terminal railroads, etc. Several government agencies are also involved in the provision and operation of these facilities. Net expenditures for the year 1972-73 are also included after the name of expenditure to indicate the relative magnitude of the operations.

a. The National Harbours Board - annual deficit ($2.0m 1972-73)

The National Harbours Board is charged with the administration and operation of port facilities at ten major ports. Federal loans to and investments in the National Harbours Board totalled $273.3 million[1] as of March 21, 1972.

b. The Harbours Commission

The Harbours Commission administers eleven other major harbours. Some 30 additional public harbours come under the direct supervision of the Ministry of Transport. Several thousand wharves and breakwaters are also administered by the Ministry of Transport. The expenses of these services are included in the Marine Transport Program which was discussed in the section on "Right-of-Way."

---

[1] Canadian Tax Foundation, The National Finances, p. 259.

Net Government Expenditure on Water Transportation (excluding subsidies)

The history of government expenditure on the water transportation facilities just described is shown in Table 5-3. According to this table, net expenditure has not changed significantly from the time the National Transportation Act was enacted in 1966-67 until 1970-71, which is the last year for which actual data are available. Estimated expenditures for the following two years do show a slight increase.

Table 5-3

Net Government Expenditure on Water Transportation Facilities

Year	Net Expenditure[1] (Millions)	Ton-Miles (Billions)	Expenditure/Ton-Mile (¢/Ton-Mile)
1960-61	$ 65.6	56.90	.115
61-62	85.1	61.43	.138
62-63	93.6	70.24	.132
63-64	100.5	70.90	.140
64-65	100.7	78.02	.129
65-66	121.0	76.11	.159
66-67	136.4	82.68	.165
67-68	140.8	74.64	.189
68-69	135.7	80.53	.166
69-70	140.2	75.78	.185
70-71	139.2	79.00	.176
71-72 E	155.5	N/A	
72-73 E	173.9	N/A	

E - Estimate
N/A - Not Available

[1] Net government expenditures include federal government spending on the waterways, ports, harbours and the vessels required to maintain them, less the revenues derived from user charges on some ports, terminal facilities and the St. Lawrence Seaway.

Source: Canada, Department of Finance, Public Accounts of Canada.
Canada, Statistics, Canada, Transportation Service Bulletin, March, 1970.
Canadian Tax Foundation, The National Finances.

Subsidies

There are several subsidies presently being paid to water carriers. These subsidies and the expenditures are detailed below:

Steamship Subventions ($7.4m 1972-73). This subsidy is paid to carriers for the provision of essential coastal services.

Ferry Services ($34.7m 1972-73). Canadian National Railways Ferry Services losses ($10.3m 1972-73) - for capital expenditure.

a. As a condition of Confederation, the federal government agreed to assist transportation between the mainland and Prince Edward Island and also the mainland and Newfoundland. CNR operates both these services and receives reimbursement for its losses which are estimated at $34.7 million for the year 1972-73.

b. In addition, the government pays subsidies for the construction of boats and terminals used in ferry services. Expenditures for the year include a $3 million grant to the province of Ontario; a $3 million grant to the province of Quebec; and $4.3 million grant for the Maritime Provinces.

Shipbuilding Subsidies ($26.5m 1972-73). The Canadian government subsidizes the construction of commercial vessels to enable Canadian ship operators to buy ships built in Canadian yards at competitive prices and to encourage the modernization of Canada's fishing fleet. The subsidy is presently 17 percent of the audited cost. There is also a temporary program of support for building ships for export in order to give jobs to Canadians. The amount of subsidy ranges from

14 percent to 17 percent, depending on the size of the vessel. Presently, orders worth $255 million have been received for delivery in the next three years.

Fishing Vessels Subsidy ($2.7m 1972-73). The Fisheries Management and Research Branch of the Department of the Environment also provides federal assistance for the construction of fishing vessels. Under this program, the subsidy is 35 percent of the capital cost. This subsidy applies to a wider range of fishing vessels than does the Shipbuilding Subsidy under the Transport sector.

Expenditure on Water Subsidies

Data on the government expenditures on water subsidies mentioned above are only available from 1964-65 to the present, due to a lack of sufficient detail in the public accounts before that date. The subsidies from 1964-65 on, are shown in Table 5-4, page 69.

Summary

There are several hundred water carriers operating in Canada. Many of these carriers are "bulk" carriers operating on the Great Lakes. Strangely enough, "bulk" carriers are not regulated. Only passenger and package freight transportation on the Great Lakes and transportation on the MacKenzie River are regulated. Licenses are required before any of the above services can be provided. In order to obtain a license, the applicant must show that the service is required and that it is not contrary to public interest. Once the license is issued, the licensee is free to withdraw the services provided at any time. Rates are controlled on the

Table 5-4

Government Expenditure on Water Subsidies

(Millions)

Year		Expenditure[1]
1960-61		Breakdown N/A
61-62		" "
62-63		" "
63-64		" "
64-65		$ 82.5
65-66		99.1
66-67		90.8
67-68		100.7
68-69		90.4
69-70		88.4
70-71		69.1
71-72		75.4
72-73	E	81.6

E - Estimate
N/A - Not available

[1] Expenditure on water subsidies include only federal spending for marine services provided at a loss and shipbuilding.

Source: Canada, Department of Finance, Public Accounts of Canada.
Canadian National Railways, Annual Report.
Canadian Tax Foundation, The National Finances.

traffic for which licenses are required. Tolls can be disallowed when they are found to be unreasonable Maximum tolls can also be established.

The government maintains the waterways of Canada. Government expenditures since the enactment of the National Transportation Act are increasing.

The government subsidizes (1) carriers for the provision of essential coastal services, and (2) shipbuilders. These expenditures have been somewhat sporadic over the years and show no clear trend.

CHAPTER VI

TRANSPORTATION BY AIR

Before beginning the analysis of this mode, it should be noted that air transportation is mainly passenger-oriented. Freight and mail traffic are merely by-products which account for approximately 11.5 percent of the total operating revenue for the industry. The number of freight ton-miles carried by air is only .1 percent of the total ton-miles.

History[1]

Involvement of Canadians in the field of aviation began in 1902 when W.R. Turnbull conducted a series of experiments on airplane stability. Then, in 1909, a Canadian engineer, John McCurdy, in association with Alexander Graham Bell, made the first flight in Canada to become the twenty-first person in the world to fly an airplane. Private interest in airplanes grew. However, at the outset of World War I, the Canadian government had no air force, or, for that matter, had no interest in organizing an air operation. Airplanes gradually proved their usefulness so the government began establishing pilot training centres. In 1918, the Royal Canadian Naval Air Service was established to protect ship convoys on the

---

[1] Department of Citizenship and Immigration, Our Transportation Services.

Atlantic Coast. After the Armistice, all military aviation activity was discontinued.

World War I did much to establish the position of aircraft. With the coming of peace, it was soon apparent that civilians would take up the use of airplanes. So, in 1919, the Canadian government passed the Aeronautics Act establishing the Air Board, which was to control airports, aircraft and aerial navigation in Canada. The Board was to have jurisdiction over all civil aviation, and government flying operations, including the Canadian Air Force.

At the same time, the Canadian Air Force was established. However, due to anti-military feelings in the country, the duties were extensively of a civil nature. One of the first tasks was the survey of a transcontinental airmail route, parts of which had already been established. Canadian pilots who had been trained through the war effort introduced numerous small commercial services across Canada. The Quebec government employed one such service for forest patrolling.

In 1921, crude oil was discovered in the Northwest Territories, which led to the first real commercial attempt to establish air transportation in the north.

In 1922, the Air Board was merged with the Department of Militia and Defence and the Department of Naval Service into one department, known as the Department of National Defence. Its function was to control all civil and military aviation throughout the country.

Meanwhile, the use of forestry patrols had reached nation-wide proportions, representing the largest commercial non-military use of aircraft.

In 1927, the Canadian government decided to participate in the development of airplanes for long-distance air transport. For this project, the government purchased a large tract of land for the purpose of constructing a public air terminal for both airships and airplanes. This project started an intensive program of government investment in aviation facilities which still exists today.

In 1928, the government undertook the construction of a number of airports and lighting facilities in the Prairie provinces as a first step towards the development of a trans-Canada airway. Service began over this route in March 1930. In addition to carrying passengers and freight, there was also a contract with the Post Office Department to carry mail.

The growth of both civil and military aviation made it increasingly difficult for one department to administer. Thus, in 1936 the Department of Transport was given authority over civil aviation in addition to its existing authority over railways, shipping and highway services. Military aviation remained under the control of the Department of National Defence. One of the first tasks of the Department of Transport in the field of aviation was the provision of an adequate transcontinental air system for Canada.

The Canadian government urged private Canadian operators to establish a transcontinental air service. However, the private carriers were skeptical that this could be done financially without government aid. The government then

turned to the two national railways: the government-owned Canadian National and the privately-owned Canadian Pacific, which were then operating a jointly-owned subsidiary called Canadian Airways.

The government proposed that Canadian Airways (Canada's largest air transport firm in 1930) should operate across the country on a non-profit basis with the government picking up the losses. The company was to have nine directors, four from CP and five from CN. Canadian Pacific, however, rejected this proposal since it would have a minority position. The ultimate result of this rejection has been the development of two national airlines.

Parliament passed an Act in 1937 creating the Trans-Canada Airlines as a subsidiary of Canadian National. In order to establish the new airline on a sound financial basis, the government granted TCA exclusive use of certain routes, and directed the Post Office to enter into airmail contracts in certain areas. The airline also received a guarantee of federal financing for any deficits.

Further construction was needed in order to bring the route up to standard. Radio stations, teletype services, two-way wireless, meteorological services, the enlargement of airports and the lighting of the route were required. These facilities were all constructed within a few years, all federally financed.

By November 1939, the last link of the trans-continental air service was completed. Extensions to the Trans-Canada service were operated by a number of regional carriers, including Canadian Airways.

In September 1939, war once again broke out. Over the course of the war, many new aviation facilities were constructed or expanded. Large numbers of pilots were trained and numerous aircraft built. When the war ended, there was a huge surplus of equipment and facilities. These facilities were turned over to civil administration as fast as circumstances would permit.

During the war, Canadian Pacific Airlines was formed through the amalgamation of ten independently operated "bush" carriers, one of which was Canadian Airways. Due to the government's stand on competition, Canadian Pacific Airlines were only permitted to develop regional or "feeder" services. In 1948, the government issued a license to CPAL to operate trans-Pacific services to Tokyo and Asia. A year earlier, Trans-Canada Airlines had assumed responsibility for the operation of the trans-Atlantic route on a full commercial basis in competition with other air lines. In 1958, Canadian Pacific Airlines was allowed to parallel Trans-Canada's (now Air Canada) route from Montreal-Toronto-Vancouver with one flight daily. In 1967, permission was granted to CP to expand services up to 25 percent of the traffic.

Air Transportation Today

The two major airlines, Air Canada and CP Air, form the nucleus of Canada's freight and passenger air services. Services provided by these two airlines are supplemented by five major regional carriers operating regularly between specific points. In addition, there are some 400 specialty air carriers catering

to the special needs of the country. The breakdown of these carriers by class is:

Table 6-1

Air Carriers By Class

No.	Class	
2	I	Air Canada, CP
5	II	Regional Air Carriers
40	III	Unit-Toll Revenues + $150,000 or Unit-Toll and Charter/Contract Revenues + $500,000
75	IV	Revenues + $150,000
340	V	Revenues - $150,000
462	Domestic Air Carriers	

Source: Canada, Statistics Canada, Aviation in Canada, 1971: A Statistical Handbook of Canadian Civil Aviation, (Ottawa: Information Canada, 1971), p. 113.

Air Canada

Air Canada (formerly Trans-Canada Airlines) was incorporated by an Act of Parliament in 1937 to provide a publicly-owned air transportation service. Air Canada is responsible to Parliament through the Minister of Transport. It is Canada's major international air carrier. In 1970, Air Canada revenues accounted for about 60 percent of the industry. As a Crown corporation, Air Canada has

its deficits paid for by the government. In the past 15 years, losses have been recorded as follows:

1960 - $2.6 million

1961 - $6.4 million

1962 - $3.5 million

1970 - $1.0 million.[1]

Privately-Owned Airlines

CP Air--a subsidiary of Canadian Pacific Limited--is a privately-owned stock company. It is Canada's second largest airline and international air carrier. Revenues in 1970 were 18% of the industry's total.

The five regional carriers: Pacific Western Airlines, Transair, Nordair, Quebecair, and Eastern Provincial Airways are all privately-owned stock companies. Together, they received 10 percent of the industry revenues in 1970. The other 400 carriers account for the remaining 12 percent of the revenues.

Regulation of Air Transportation

Civil aviation in Canada is under the jurisdiction of the federal government. It is administered under the authority of the Aeronautics Act and the National Transportation Act.

---

[1] Air Canada, Annual Report, 1971, (Montreal, 1971), p. 10.

The Canadian government's activity in civil aviation takes numerous forms: certifying pilots, licensing aircraft, regulating entry and rates, deciding how much competition is acceptable, building and operating airports, controlling airways, providing weather information, subsidizing airlines, etc.

All air carriers, except Air Canada, are closely regulated under these Acts in virtually all economic and safety aspects of transport. Air Canada operates under a contract with the federal government pursuant to Sections 15 and 24 of the Trans-Canada Airlines Act and through licenses which originate from the Canadian Transport Commission. These licenses are pure formality since Air Canada is responsible to the Minister of Transport and Parliament.

The policy regarding civil aviation is to provide an efficient and stable service for the Canadian public and the best possible economic framework for the orderly development of commercial aviation. In 1964, three basic principles of aviation policy were accepted by the government:

1. In regard to the international traffic - air services, provided by Canadian airlines, should serve the Canadian interest as a whole; furthermore, these services should not be competitive or conflicting but should represent a single integrated plan which could be achieved by a clear division of fields of operations.

2. In regard to domestic mainline services - although competition is not to be rejected, development of competition should not compromise or seriously injure the economic viability of Air Canada's domestic operations which represent the essential framework of its network of domestic services, and in the event that competition continues, opportunity should be ensured for growth of both lines above this basic minimum.

3. Regarding regional air carriers -

(a) Regional carriers will provide regular route operations into the North and will operate local or regional routes to supplement the domestic mainline operations of Air Canada and CP Air; they will be limited to a regional role.

(b) Greater scope will be allowed regional carriers in the development of routes and services by the following means:

- where appropriate, limited competition on mainline route segments of Air Canada or CP Air may be permitted to regional carriers if this is consistent with their local route development

- in a few cases, secondary routes, at present operated by Air Canada and CP Air may become eligible to transfer to regional carriers, and

- a larger role will be allocated to regional carriers in connection with the development of domestic and international charter services, inclusive tours and new types of services.

(c) Greater co-operation between the mainline carriers and regional carriers will be developed in a variety of fields ranging from technical and servicing arrangements to joint fare arrangements.

(d) A limited policy of temporary subsidies for regional routes will be introduced to be based upon a "use it or lose it" formula.

(e) Firmer control will be exercised over the financial structure of regional carriers in connection with new licensing arrangements.

(f) Regional carriers will be assisted with the acquisition of aircraft by development of a scheme for consultation between government and the carriers regarding plans for new aircraft, and by special investigation designed to explore the possibility of developing a joint approach to this problem on the part of the carriers.[1]

---

[1] Canada, Statistics Canada, Canada Year Book, 1972, pp. 919-920.

Entry and Service Control

From this statement, it is evident that entry into the aviation business is somewhat restricted. The basis for entry is "present or future public convenience and necessity" as determined by the Air Transport Committee of the CTC. However, the federal government will permit no additional competition on its main-line routes operated by Air Canada. On the existing secondary routes, there is almost no possibility of entry because of the economics of air transportation. This leaves a very small segment of the market, which is really open to new firms. These markets include:

- secondary routes where no service exists,
- air charter,
- contract flying.

Control over service lies in the Air Transport Committee's power to impose conditions respecting schedules, places of call, carriage of passengers, freight and mail. With respect to discontinuance of a licensed service by the licensee, the authority to prescribe routes and schedules prevents dropping of parts of the service without regulatory approval.

Rate Control

By an amendment to the Aeronautics Act, final authority on rates lies with the Air Transport Committee of the CTC. Section 13 of the Aeronautics Act states:

13 (1) The Commission may make regulations . . .

(m) respecting traffic, tolls, tariffs and providing for

(i) the disallowance or suspension of any tariff or toll by the Commission

(ii) the substitution of a tariff or toll satisfactory to the Commission, or

(iii) the prescription by the Commission of other tariffs or tolls in lieu of the tariffs or tolls so disallowed.[1]

The Trans-Canada Airlines Act requires TCA (now Air Canada) to maintain tariff charges "on a competitive basis with other services in North America."[2]

The Commission is empowered to regulate the rates charged by air carriers. All air carriers, with a few minor exceptions, must publish and file tariffs with the Commission on all types of traffic which they are licensed to carry. These tariffs must also be available for public inspection.

The Commission has the power to disallow any tariffs that, in its opinion, are discriminating, unjust or unreasonable, or against the public interest. It may then determine and prescribe the maximum, minimum, or individual tolls.

---

[1] Canada, Aeronautics Act, Section 13 (1).

[2] Canada, Trans-Canada Airlines Act, RSC 1952 C.268, Section 15 (2) (d).

Ownership of Facilities

Vehicles. The vehicle for air transportation takes on many different forms, such as vertical take-off and landing planes, helicopters (VTOL); short take-off and landing planes (STOL); jet airplanes; propeller planes; balloons, etc. These vehicles are owned or leased by the carrier.

Right-of-Way. The right-of-way in air transportation, excluding the land rights for the airport, consists of air space. Through an agreement of International Civil Aviation Organization, which all nations have agreed to, air rights belong to the nation and not to the individual land owners over which the air exists. Thus, the ownership of the air routes rests with the government. No user charges are made for use of the air space. In cases of international air routes, normally the only concession which must be given to foreign countries is a reciprocal arrangement which allows their carriers to fly through your air space. The following are the government programs and the expenditure for 1972-73 which relate to the right-of-way.

a. Air Transportation Program ($134.1m 1972-73)

The federal government assumes the basic responsibility for the safe operation of the airways, runways and taxiways. Three of the major expenditures of this program are for the following:

(i) Air Traffic Control

Originally, air traffic control was left up to the individual pilots whose responsibility it was to avoid mishaps. However, as the airways

became more congested and the airplanes became faster, it became evident that this system was not working. Once again, it was necessary for the government to intervene in order to provide safe and efficient airspace utilization.

Air flights are now under almost constant surveillance from the time the plane begins groundmanoeuvres until the plane is in its final position on the ground. Four basic services are provided by air traffic control:

(1) Air Control Service: this service is provided to all aircraft and ground vehicles manoeuvring within a 5-10 mile radius of the airport. Radio is the prime means of communication.

(2) Terminal Control Service: this service is provided to aircraft in flight operating within a 30-50 mile radius of an airport. Both radar and direct radio communication are used.

(3) Area Control Service: this service is provided to aircraft enroute between airports.

(4) Airspace Reservation Service: this is an air reservation service for specified operations within controlled air space. It is also used for providing other pilots with information regarding the reservation of air space.

(ii) Telecommunications and Electronics Branch

Air traffic control requires a wide variety of sophisticated electronic equipment to aid the safe movement of all aircraft in the various stages of flight.

These aids to air navigation are provided and maintained by the Ministry of Transport - Telecommunications and Electronics Branch. The

aeronautical navigation aids stretch from coast to coast and from the United States border to the Arctic Regions.

(iii) Meteorological Services

Airplane operations are still, to a large extent, dependent on good weather. Thus, it has been necessary to establish a coast-to-coast network of meteorology offices which are constantly reporting on weather conditions. In June 1971, there were 2,460 weather reporting stations in Canada, with 280 first order stations located mainly at airports.[1]

Terminals. Of the 1,581 airports in Canada, 142 are operated by the Ministry of Transport, 286 are operated by municipalities, and 1,007 are operated privately with the rest being operated by various other agencies. As was previously mentioned, government expenditures are limited to the federal level because of a lack of data for municipal expenditures.

a. Airports ($259.3m 1972-73)

Air terminals are made up of a host of buildings and services too numerous to mention. The capital cost of a large modern airport is huge. (The international airport at St. Scholastique, Quebec, scheduled to open in 1974, is estimated to cost $400 million[2]). Direct investment in these facilities and grants

---

[1] Canada, Statistics Canada, Canada Year Book, 1972, p. 960.

[2] Canada, Statistics Canada, Aviation in Canada, p. 39.

to municipal airports are shown on Table 6-2. While supporting airport construction directly, the federal government has also continued to support the erection of air terminals by local or municipal bodies (Table 6.2). In 1965, a ceiling of $1 million per year per airport was placed on federal aid to municipal airports. In addition, $5 million was spent on local, remote and development airport projects between 1960 and 1970.

Table 6-2

Federal Expenditures for Airport Development, 1960-70
(thousands)

Year	Direct Government Investment [1]	Aid to Municipalities [1]	Remarks
1960	$52,542	$ 99	
1961	52,907	89	
1962	60,900	98	Contribution (1958-65):
1963	48,748	88	$50,000 maximum for
1964	27,709	101	remote airports; 50/50
1965	40,255	36	cost-sharing for local or
1966	42,459	773	municipal airports.
1967	52,016	653	
1968	45,893	1,018	$1,000,000 ceiling
1969	59,119	1,393	for total municipal aid
1970	36,961	721	(1965 -).

[1] Excludes grants for terminal buildings and equipment garages at municipal mainline airports.

Source: Canada, Statistics Canada, Aviation in Canada, 1971, p. 26.

Net Government Expenditure on Air Transportation (excluding Subsidies)

Table 6-3 shows the net government expenditure on air transportation facilities. The total ton-miles for both passenger and freight have been used in the calculation of the expenditure per ton-mile since a large amount of the expenditure is passenger-oriented. Except for the estimate for 1972-73,

Table 6-3

Net Government Expenditure on Air Transportation Facilities

Year		Expenditure[1] (Millions)	Ton-Miles (Billions)	Expenditure/Ton-Mile (¢/Ton-Mile)
1960-61		$ 133.0	392	33.9
61-62		150.0	430	34.9
62-63		116.3	462	25.0
63-64		100.3	545	18.4
64-65		104.1	642	16.2
65-66		114.8	745	15.4
66-67		133.7	902	14.8
67-68		137.8	1,042	13.2
68-69		150.9	1,262	11.9
69-70		146.9	1,395	10.5
70-71		99.0	1,438	6.9
71-72	E	147.0	1,674	8.7
72-73	E	393.4	N/A	

E -- Estimate
N/A - Not available

[1] Net government expenditure includes federal government spending on airport and air control, less revenues from airport concessions. Data from Table 6-2 included in this table.

Source: Canada, Department of Finance, Public Accounts of Canada.
Canada, Statistics Canada, Aviation in Canada.
Canadian Tax Foundation, The National Finances.

expenditures have been relatively stable, with a continual decrease in expenditure per ton-mile due to an increasing number of ton-miles. The unusually high estimate for expenditures in 1972-73 is due to a new cycle of airport construction to facilitate the recently introduced jumbo jets and the planned arrival of supersonic jets in the near future.

Subsidies ($2.0 million 1972-73)

The federal government has the power to subsidize services to remote areas where surface transportation is inadequate, where transportation services are deemed in the public interest, and where the government can avoid higher expenditures on alternative transportation.

The government has coined the phrase, "Use it or lose it" to depict their policy towards airline subsidies. The subsidies are to aid in the implementation stages until a market has been established or until it can be determined that there is no real need for air services. Clearly, the intention of the N.T.A. is for regional airlines to operate without subsidies.

Expenditure on Air Subsidies

Air subsidies are shown in Table 6.4 (page 88). In 1964, the government initiated its policy on regional air subsidies. Before that time, there were no known subsidies. As previously mentioned, payments to the airlines for air mail transportation will not be dealt with here. Whether or not air mail is subsidized is a highly debated subject. In order to handle the subject properly, an intense examination of the airline cost structure would need to be made.

Table 6-4

Government Expenditure on Air Subsidies

Year		Expenditure[1]
1960-65		$0
65-66		2.4
66-67		3.0
67-68		3.2
68-69		2.8
69-70		5.3
70-71		2.9
71-72		2.0
72-73	E	2.0

E - Estimate

[1] Expenditures include federal spending on regional air lines which operate some approved routes at a loss. Approval for repayment of the loss may be obtained for publicly-required service where no other transportation exists or for market testing of routes.

Source: Canada, Department of Finance, Public Accounts of Canada. Canadian Tax Foundation, The National Finances.

Summary

Air Canada, a Crown corporation, and CP Air form the nucleus of Canada's air industry. The federal government regulates civil aviation. Among its regulatory roles, the government decides how much competition is acceptable. In 1964, the federal government set out three principles regarding competition. First, international traffic is to be divided between Air Canada and CP Air. Second, on mainline domestic routes, competition is to be permitted only when it does not injure the economic viability of Air Canada. Third, regional carriers

will supplement domestic mainline operations and will receive temporary subsidies for regional routes introduced on a "use it or lose it" formula. Licenses must be obtained for all services and these services cannot be discontinued without regulatory approval. Rates must be published and filed with the Canadian Transport Commission. Unreasonable rates can be suspended and the Commission has the power to prescribe a rate in lieu of the one disallowed.

The federal government operates the airways and many of the air terminals. Net expenditures have not fluctuated greatly since 1960 except for the estimates of 1972-73. The reasons for the high estimate are:

1. a new generation of planes (supersonic jets) is coming on stream which require longer runways, and

2. the sheer volume of traffic has out-paced the present facilities.

Subsidies to regional carriers are on a "use it or lose it" formula. Since the subsidies began in 1965-66, they have decreased slightly.

CHAPTER VII

TRANSPORTATION BY PIPELINES

History

Pipelines are not new. Centuries ago the Romans and Egyptians used wooden aqueducts for channelling water into city centres. However, it was only within the last century that pipelines were adapted for transporting other materials, such as petroleum, natural gas, and, even more recently, for transporting solids.

The first known non-aqueous pipeline in Canada was built in the 1850's for the distribution of coal gas in eastern Canadian cities. During the next hundred years, only a few pipelines were built. It was not until the discovery of a fabulous reserve of petroleum near Leduc, Alberta in 1947, that oil pipelines--as we know them today--really became feasible. In just six years, the number of miles of pipelines grew from almost nothing to 5,800 miles, plus an additional 1,500 miles in the U.S. which is used exclusively to transport Canadian crude.[1]

Then,in 1957, vast reserves of natural gas were found in Alberta. Once again the number of miles of pipeline increased significantly.

---

[1] A.W. Currie, Canadian Transportation Economics, (Toronto: University of Toronto Press, 1967), pp. 632-33.

Pipeline Transportation Today

In 1970, Canada's oil and gas pipelines handle approximately 87 billion ton-miles of freight per year or 29 percent of the total ton-miles for all modes[1] through a 75,000-mile system.

There are some 30 oil and oil products pipeline companies operating 10,537 miles of trunk (main) lines and 4,810 miles of gathering lines. The longest of the oil trunk lines is Interprovincial Pipeline Company, with 2,770 miles of line serving 34 refineries.[2]

There are some 30 natural gas pipeline companies operating a total of 59,209 miles of line with 6,829 miles being gathering lines, and 18,663 being trunk (main) lines, and 33,717 being distribution lines.[3]

Trans Canada Pipeline Company is the largest natural gas trunk line company, operating 3,400 miles of line from Alberta to Toronto and Montreal. The second largest natural gas pipeline is Westcoast Transmission Company, with a 900-mile line from northeast British Columbia to Vancouver.[4]

---

[1] Canada, Dominion Bureau of Statistics, Transportation Service Bulletin, March 1970.

[2] Canada, Statistics Canada, Oil Pipe Line Transport, 1970, (Ottawa: Information Canada, 1973), p. 42.

[3] Canada, Statistics Canada, Canada Year Book, 1972, p. 937.

[4] John Schreiner, Transportation: The Evolution of Canada's Networks, (Toronto: McGraw-Hill Ryerson, 1972), pp. 83-84.

Technological Developments

Oil and gas pipelines are considered as first generation pipelines. "Slurry" pipelines are second generation pipelines. In slurry lines, a solid is crushed and mixed with a carrier fluid, such as water or oil. At the destination the solid is removed from the carrier fluid by drying or some other process. This separation process presents two problems. The first is cost. The cost of separating the solid from the carrier fluid must be less than the advantages gained by transporting the commodity by pipeline rather than by an alternative mode. The second problem regards the use or disposal of the carrier fluid.

The third generation pipelines are "capsule" pipelines. Here, a solid is either packed as a rigid slug or encased in a protective capsule and then propelled by a carrier fluid. This type of pipeline has many advantages in that almost any commodity which can fit inside a pipe can be transported by pipeline. Many different commodities can be transported simultaneously. In addition, there is no problem separating the solid capsule from the liquid carrier as in the second generation pipelines.

One reason why the development of second and third generation pipelines has been slow is that other modes have significantly reduced freight costs in order to remain competitive with pipelines. For instance, the railways developed the unit train for bulk movements. One case is known where an existing slurry pipeline in the U.S. was closed as a result of the introduction of the unit train.[1]

---

[1] Purdy, op. cit., p. 56.

Inherent Advantages of Pipelines

First and second generation pipelines enjoy several advantages not found in other modes:

- They operate continuously without interruption from bad weather and traffic.

- There is no vehicle or container involved, thus there is no return movement of empty containers.

- They are capital intensive, thus avoiding spiralling wage costs (wages are 10 percent of revenues for pipelines as compared to 52% for railways) and costly strikes.

- They use right-of-ways which avoid the more costly urban areas and which are sometimes submerged, thus allowing partial use of the surrounding land.

- They are relatively inexpensive to maintain, due to advanced technology which reduces corrosion and increases the durability of the pipe .

- They have relatively high fixed costs (interest on bonds is fixed, thus reducing one typical business risk--fluctuating cash requirements).

These advantages have made it possible to maintain the price of pipeline transportation well below either rail or water competition, although, as was previously mentioned, other modes have improved efficiency in order to regain some competitive advantages.

Regulation of Pipeline Transportation

Jurisdiction over transportation by pipelines is determined by two different Acts. Interprovincial and international "commodity pipelines" are regulated under the National Transportation Act. The National Energy Board Act gives the National Energy Board control over oil and gas pipelines. Presently, since only oil and gas pipelines are in operation commercially, all regulation falls under the jurisdiction of the National Energy Board. Both the NTA and the National Energy Board Act provide entry and rate controls.

Entry and Service Control

Regarding entry control for commodity pipelines, the National Transportation Act, Part II, states[1]

> . . . the Commission may issue a certificate in respect of a commodity pipeline if the Commission is satisfied that the pipeline is and will be required by reason of the present and future public convenience and necessity, and, in considering an application for a certificate, the Commission shall take into account such matters as to it appear to be relevant, including, without limiting the generality of the foregoing, the following:
>
> (a) the economic feasibility of the pipeline
>
> (b) the financial responsibility and financial structure of the applicant, the methods of financing the pipeline and the extent to which Canadians will have an opportunity of participating in the financing, engineering and construction of the pipeline; and
>
> (c) any public interest that in the opinion of the Commission may be affected by the granting or refusing of the application.

---

[1] Canada, National Transportation Act, Section 25.

Regarding entry control for oil and gas pipelines, the National Energy Board Act states[1]

> The Board may, subject to the approval of the Governor in Council, issue a certificate in respect of a pipeline or an international power line if the Board is satisfied that the line is and will be required by the present and future public convenience and necessity, and, in considering an application for a certificate, the Board shall take into account all such matters as to it appear to be relevant, and without limiting the generality of the foregoing, the Board may have regard to the following:
>
> (a) The availability of oil or gas to the pipeline, or power to the international power line, as the case may be;
>
> (b) the existence of markets, actual or potential;
>
> (c) the economic feasibility of the pipeline or international power line;
>
> (d) the financial responsibility and financial structure of the applicant, the methods of financing the line and the extent to which Canadians will have an opportunity of participating in the financing, engineering and construction of the line; and
>
> (e) any public interest that in the Board's opinion may be affected by the granting or the refusing of the application.

Both Acts are very similar in that they require:

(1) Economic Feasibility:

The applicant must first show that there is a sufficient supply and demand for the proposed service at a public hearing. In addition, he must show that the expected revenues are sufficient to meet reasonable expenditure levels. The two Acts differ in that the National Energy Board Act specifies two

---

[1] Canada, National Energy Board Act, 1959, C.46, Section 44.

conditions of economic feasibility, namely, that sufficient supply and demand exist.

(2) Financial responsibility:

The applicant must show that there are sufficient funds available for the construction and immediate operation of the facilities so that government aid is not required part-way through the project. In addition, the government provides guidelines to ensure that Canadians are able to participate in the financing, engineering and construction of the pipeline.

(3) Public interest:

With regard to public interest, the applicant must be able to disprove any charges that the proposed pipeline would not be in the public interest.

Rate Control

The N.T.A. and the National Energy Board Acts both require that the tolls and tariffs be filed with their respective regulatory board. Each board has the power to determine whether:

a. the tolls are "just and reasonable,"

b. the conditions and circumstances of carriage are substantially similar for similar moves and the rates have been charged equally to all persons.

The one difference is that the National Transportation Act defines what is not just and reasonable. Their definition is based on what "the Commission considers to be not compensatory and not justified by the public interest: or. . . that unduly takes advantage of a monopoly situation favoring commodity pipeline

carriers."[1] Either board can disallow any tariff that it considers contrary to the provisions of their respective Act and either require the company to substitute a satisfactory tariff or the Board itself can prescribe a tariff.

One additional criterion was required for the first east-west pipeline: an all-Canadian route. The government decided that the needs of Canadians were more paramount than an export market at that point in time, so an all-Canadian route was selected and built. Once the first all-Canadian pipeline was operating, the government did allow other lines to go through the United States.

Ownership of Facilities

Vehicles. First generation (oil and gas) pipelines display unusual characteristics in that there are no vehicles per se. This situation, however, is different with second and third generation pipelines since the carrier fluid acts as a vehicle. A use must then be found at the destination for the carrier fluids.

Right-of-Way. The right-of-way consists of land, the pipe making up the pipeline and pumping stations. These facilities are carrier-owned and maintained. In 1970, the oil pipeline property account was $900 million, of which $17 million was land, $645 million was pipeline, and $55 million was pumping equipment. Thus, right-of-way, with an investment of $717 million, represents 80 percent of the total investment.[2]

---

[1] Canada, National Transportation Act, Section 26 (3), (a) and (b).

[2] Canada, Statistics Canada, Oil Pipe Line Transport, 1970, p. 54.

The carrier does enjoy certain cost advantages in the ownership of these facilities. The major cost advantage is the cost of the land. Pipelines follow a much straighter route than any of the other modes since they enter only the major urban areas. Only one right-of-way is required into each urban area since the main line can circumvent the populated areas. Railways and highways, on the other hand, usually have two and, often times, more routes into an urban area. Pipelines can also be buried in the ground, leaving the surface available for other uses. All of these items help to reduce the cost of acquiring the land portion of the right-of-way.

Terminals. The terminal facilities include gathering or distribution lines, wells, refineries, storage tanks, etc. The provision of these facilities is negotiated between the shipper (producer) and the carrier. In 1970, 1,780 miles out of 6,524 were producer-owned, with the rest being carrier-owned.[1] Of the $900 million in the property account, only $13 million is for receiving and delivering facilities.[2]

Subsidies

From 1958 to 1963, a section of the Trans-Canada natural gas pipeline in Northern Ontario was owned by the federal government and leased to Trans-Canada Pipelines, due to the fact that Trans-Canada Pipelines could not raise

---

[1] Canada, Statistics Canada, Oil Pipe Line Transport, 1970, p. 7.

[2] Ibid., p. 54.

sufficient capital. The major reason why capital could not be obtained was that, "The investment community did not think that an all-Canadian pipeline would be notably profitable."[1] In 1963, funds were raised and the line was purchased. Presently, there is no government ownership, government subsidization of any facilities, or government carriers involved in pipeline transportation.

Summary

There are some 60 oil and gas pipeline companies operating approximately 140,000 miles of pipeline. Oil and gas pipelines have continued to increase their share of the market using ton-miles as the measure. In 1970, pipelines had 29 percent of the market, compared to 16 percent in 1960. Oil and gas pipelines come under the jurisdiction of the National Energy Board Act which requires that a license be obtained for all services. Licenses are issued on proof of "public convenience and necessity" and "public interest." Rates must be filed and must be just and reasonable.

There has been no government investment, operation, or subsidies of pipeline companies.

---

[1] Schreiner, op. cit., p. 85.

CHAPTER VIII

ANALYSIS OF GOVERNMENT INVOLVEMENT

Chapters III through VII have shown the present degree of government involvement in each of the five modes: rail, road, water, air, and pipeline. The thesis will now examine the question of whether the present degree of government involvement is consistent with the National Transportation Policy.

Government Involvement in Transportation Regulation

Regarding regulation, the National Transportation Act states: "Regulation of all modes of transport will not be of such a nature as to restrict the ability of any mode to compete freely with any other mode of transport."[1]

First of all, this statement implies that some degree of regulation is given. Since the question of the degree of regulation which is required is a thesis in itself, it will not be dealt with here. Secondly, the Act states that in order for the modes to compete, any mode should not be more restricted by regulation than another mode.

In order to achieve this objective, uniformity of treatment is required. This uniformity can best be obtained when all the modes come under the same regulatory body. If more than one regulatory body is involved, varying

---

[1] Canada, National Transportation Act, Section 1 (a).

objectives between the regulatory bodies often lead to different degrees of regulation which, in turn, affect the abilities of the modes to compete.

Although section 1(a) of the N.T.A. advocates uniform treatment of the modes, there is no common regulatory body which can provide a common direction. In fact, to complicate the situation even more, the jurisdiction over the modes is split between the federal and provincial governments. The federal government has jurisdiction over extra-provincial railroads, pipelines, water carriers and air carriers, whereas the provincial government has jurisdiction over all trucking.[1]

Federal jurisdiction is further divided. The Ministry of Transport has broad responsibility for planning and developing, while the Canadian Transport Commission is responsible for promotional functions. Oil and gas pipelines are regulated by the National Energy Board with the Canadian Transport Commission regulating all other modes under federal jurisdiction. Although the jurisdictional power exists, no regulation presently exists for: (1) bulk water carriers on the Great Lakes, and (2) extra-provincial private and contract road carriers (intra-provincial private and contract road carriers are not regulated on a provincial basis).

---

[1] The federal government had jurisdiction over extra-provincial trucking; however, they have turned the control over to the provincial boards which regulate intra-provincial trucking.

What is needed is a coordinating body which is capable of bringing some uniformity to the present system. In regard to uniformity, Ivan R. Feltham has this to say:

> . . . the specific statutory directives to the Transport Commission are not at all uniform, although all modes and the distinctive services provided by those modes are part of a single system with a single goal, namely, the provision of economic, efficient and adequate transportation service in Canada . . .
>
> Certainly, we would appear to know better what we are doing if we were to develop a comprehensive transportation code within which special rules could be framed as required, rather than persisting with the scissors-and-paste job which characterizes our present statutory package.[1]

With regard to the division of legislative power, Feltham says:

> This is one of the fundamental problems in the development of a rational regulatory structure . . . . An illustration (of a solution to this problem) of current importance is the insistence by the Government of Ontario that there should be established some joint economic machinery to develop and co-ordinate policy.[2]

Thus, it appears, as I.R. Feltham is suggesting, that the present regulatory machinery is not operating very well and that a uniform set of regulations is required--coordinated by one joint (federal-provincial) board.

In addition to the general omission of full jurisdiction and coverage of the Act, there are a number of examples where a specific portion of the regulation of a mode or modes appears to restrict the abilities of the modes to compete:

---

[1] Feltham, op. cit., pp. 8,9.

[2] Ibid., pp. 16,17.

(i) Entry Controls

(a) Application for licenses - Because of the nature of rail, air, water, and pipeline carriers (especially concerning size, financial strength, etc.), these carriers can better bear the costs of preparing a case for a public hearing than road carriers who are generally small and not as financially well off. This disadvantage of road carriers has tended to weaken their competitive position vis-a-vis the other modes.

H.L. Purdy sums up the case like this:

> A second cost, a literal one, of particular importance to the trucking industry is the time and expense incurred in meeting administrative procedures required by public regulation. To the large railways, these are not very burdensome in a financial sense. But to the typical trucking company, the preparation and presentation of application for licences, the meeting of opposition claims, probably in public hearing; and a considerable variety of other procedural requirements can mount to burdensome costs.[1]

(b) National Air Policy - It is national air policy to divide the main air routes between Air Canada and CP Air. "National air policy describes the place to be held in the market by the two major air carriers. As a result of this unquestionable acceptance of this policy by the CTC, unusual entry controls exist in the air field . . . ."[2] This restrictive entry policy limits the ability of the air mode to compete by the ability of the existing carriers who now operate the main routes.

---

[1] Purdy, op. cit., pp. 309, 310.

[2] Ibid., p. 190.

(ii) Rate Control

(a) Minimum and Maximum Rates - The N.T.A. specifies that rail rates must fall within specifically defined minimum and maximum rates. Although prudent management practice is to operate within these limits in the long run, there is no latitude to operate outside these limits for special reasons. This allows other modes to operate outside similar rate constraints which are non-existent in order to gain competitive advantages.

(b) Costing - In order for the modes to compete, it is obviously necessary that any minimum standards for rates be calculated on uniform principles. "If cost is to be the desideratum for the price of any service, the principles of costing should be uniform as far as that is possible."[1] Since some costs are based on investments, the general principle should also apply to the specific case, i.e., the principles of investment should also be uniform if the modes are to compete on an equal basis. However, as previously shown, investment in each of the modes is substantially different. As a result of this difference in investment policy, the principles or basis of costing are not uniform; therefore, the modes cannot compete as effectively as possible. The government's involvement in modal investment is dealt with further in the next segment.

Government Involvement in Transportation Facilities

As the thesis previously pointed out, the government's involvement in transportation facilities takes the form of investment and/or operation of rights-of-way

[1] Feltham, op. cit., p. 42.

and terminals. Table 8-1 gives a summary of the major areas of this involvement in facilities as determined in Chapters III to VII.

Table 8-1

Government Involvement in Transportation Facilities

	Pipeline	Rail	Truck	Water	Air
Vehicle					
Right-of-Way			x	x	x
Terminal				x	x

The question to be examined is whether "each mode of transport, so far as practicable, bears a fair proportion of the real costs of the resources, facilities and services provided that mode of transport at public expense." In order to show whether or not the modes are bearing the cost of publicly provided facilities, the net expenditure of all levels of government for each of the modes was examined. A summary of the findings is shown on Table 8-2 (page 106). The ultimate objective, of course, is no net expenditure by the government. However, as Table 8-2 shows, this is not the case. As a secondary objective, the government should be pursuing a policy of uniformity of investment between the modes in order to not shift the inherent advantages of the mode. Investments in facilities of one mode without a similar investment in the same type of facilities for the other modes gives the mode receiving the investment a competitive advantage.

Table 8-2

Summary of
Net Government Expenditure on Transportation Facilities

(Millions)

Year	Rail	Road	Water	Air	Pipeline
1960-61	$67.4	$499.1	$ 65.6	$133.0	0
61-62	67.3	365.8	85.1	150.0	0
62-63	48.9	366.3	93.6	116.3	0
63-64	43.0	471.3	100.5	100.3	0
64-65	38.7	552.1	100.7	104.1	0
65-66	33.4	668.4	121.0	114.8	0
66-67	22.1	781.9	136.4	133.7	0
67-68	38.3	664.6	140.8	137.8	0
68-69	29.1	565.4	135.7	150.9	0
69-70	24.6	574.5	140.2	146.9	0
70-71	29.7	634.5	139.2	99.0	0
71-72	64.2	N/A E	155.5 E	147.0	0
72-73	17.8	N/A E	171.9 E	393.4	0

E - Estimate
N/A - Not available

Upon examination of Table 8-2, one finds that only pipelines show no net government expenditure (mainly because there is no government expenditure whatsoever). There is very little net expenditure on railways. Since the enactment of the National Transportation Act in 1966-67, the government expenditure on railways has fluctuated considerably with no trend being evident. Net government expenditures for water and air facilities appear to be on the upswing, while expenditure on road facilities has decreased slightly.

In addition to the above data, modal studies directed by Mr. Z. Haritos for the Canadian Transport Commission show that in 1968 the total revenue received by the government in payment of transportation services they provided, as a percentage of the total cost of the transportation services and facilities, was 72 percent for road, 22 percent for air, and 21 percent for water.[1]

These data verify the fact that the modes are not bearing the costs of the resources.

It is difficult to relate government expenditure to ton-miles (which is the standard unit of production in transportation), because of the non-availability of comprehensive figures. The only estimates of ton-miles which are available include only "for hire" transportation and not private transportation. In the case of roads, a substantial portion of the traffic is in private automobiles for which no reliable estimates are available. Both the waterways and airways are also used by private parties. Data on this non-commercial use are extremely limited and often inaccurate. Thus, it is not possible to compare expenditures per ton-mile.

Despite the trends in net expenditure, no policy changes have been found which alter the amount of user charges assessed the modes. Thus, there

---

[1] Canadian Transport Commission, Economics Branch, Road Costs and Revenues; Civil Aviation Infrastructure Annual Costs and Revenues; Civil Marine Infrastructure Annual Costs and Revenues, (Ottawa, 1972).

has been no progress in attempting to recover the costs of the resources from the modes.

Subsidies

Regarding subsidies, the National Transportation Act states: "Each mode of transport, as far as practicable, receives compensation for the resources, facilities and services that it is required to provide as an imposed public duty."[1] Although there are no exceptions either stated or implied in the above statement, the body of the Act contains a number of major exceptions to this rule:

1. Statutory Grain Rates. Under Section 50 of the National Transportation Act, Crow's Nest Pass rates, rates on grain and flour for export through the West Coast and rates on grain and flour for export through Churchill are to remain at the present levels established by Parliament and are not subject to subsidization.

2. Grain Rates. Also under Section 50 of the N.T.A., rates on flour and grain for export through eastern ports are to remain at the present level; however, the Governor in Council may authorize the payment of a subsidy as determined by the Canadian Transport Commission.

3. Branch Line Abandonments. Under Section 42 of the N.T.A., uneconomical branch lines, which the Commission has prohibited from being abandoned, may only receive special assistance of up to 80 percent of the

---

[1] Canada, National Transportation Act, Section 1(c).

certified loss. In order to fully examine the question of whether the modes are receiving compensation for publicly imposed duties, existing subsidies are examined individually to determine whether a public duty is actually being imposed on a mode.

- General Freight Rate Subsidy (Rail)

The G.F.R.S. is an interim subsidy which is being phased out and replaced by specific subsidies for uneconomic branch lines and uneconomic passenger services. Both of the latter services are examined in public hearings to determine if the services can be discontinued. Only if the service is determined to be required in the public interest is the subsidy paid. Since the general freight rate subsidy is an interim measure for two essential services, it should be regarded as an imposed public duty. Under the National Transportation Act, only 80% of the certified loss is recoverable. In theory, the railways should be paid 100 percent of the loss.

- Martime Freight Rates Subsidy (Rail)

At the time of Confederation, Canada accepted an obligation to provide for products of the Maritimes access to the larger markets of the west. Since this obligation remains in force regardless of economic considerations, it is argued that "to the degree that non-economic objectives are responsible for the existence

of these facilities, their costs should be borne not by their users but rather by the people of Canada as a whole."[1]

This subsidy is not an imposed public duty. However, it does fulfill a national objective and so it should be subsidized, although not from a transportation budget.

- Atlantic and Eastern Ports Subsidy (Rail)

Since the railways are compelled to carry grain but are not permitted to charge "market" prices, it may be interpreted that it is an imposed public duty to carry the grain. The railways should then be subsidized for the difference between what is being charged and a "fair" price for the movement of goods. This "fair" price should be set bilaterally between the railways and the Canadian Transport Commission and not solely by the latter which is the present procedure.

- Feed Grain Subsidy (Rail)

This subsidy is similar to the "At-and-East" subsidy in that railways are required to move a commodity at less than the "fair" market price. As with the "At-and-East" subsidy, the railway should be reimbursed for the difference between the price charged and the "fair" market price.

---

[1] Herbert Mohring, Transportation Subsidies and the Economics of the Atlantic Provinces, unpublished manuscript, 1972, pp. 3,4.

- Railway Grade Crossing Fund (Rail)

The Railway Grade Crossing Fund provides monies for safety devices at railway crossings. Provision of safety devices in most industries, even though the safety requirements are legislated by governments, are the financial responsibility of the manufacturer who then usually incorporates the cost in the price of the goods. An example of legislated safety requirements is seat belts in cars. The costs of the belts are borne by the automobile manufacturer who then passes the cost on to the consumer. No valid reason can be seen for not applying the same criteria to the railways.

- Pensions Subsidies (Rail)

Inasmuch as the pensions were inadequate by some standard and a decision was made to increase the pension, this was done on a social welfare basis and should not be charged to transportation.

- Subsidies (Truck)

The subsidy which is paid to truck companies is the M.F.R.A., which was discussed earlier under rail subsidies. It was decided that this subsidy is being paid for national unity purposes and, as such, it should not be paid out of the transportation budget.

- Steamship Subventions (Water)

This subsidy is for the provision of essential coastal services. Since these services must be provided, this is a publicly imposed duty.

- Ferry Services (Water)

Ferry services to Newfoundland and Prince Edward Island were agreed to as a condition of Confederation. Thus, these services could be considered as an imposed public duty for the purpose of national unity.

- Shipbuilding and Fishing Vessel Subsidies (Water)

These two subsidies have been grouped because of their similarity. Both subsidies are paid to stimulate the building of vessels which has declined because of high prices relative to foreign shipbuilders. Like the pension subsidy paid to railway pensioners, this is a social welfare or perhaps a defence cost, and should not be paid out of the transportation budget.

- Regional Air Carrier Subsidies (Air)

Regional air carrier subsidies, as the name implies, are paid to regional air carriers. The purpose of the subsidy is to test new markets for air services which, if unsuccessful, must be discontinued with the interim losses paid for from the public treasury. It is difficult to conceive this subsidy as an imposed public duty. Actually, it really is an inefficient means of market research.

Overview of Subsidies

Two subsidies, the Regional Air Carrier subsidy and the Railway Grade Crossing Fund, appear to have no visible ties with imposed public duty. The former subsidy is an expensive means of market research and the latter subsidy is a safety requirement cost; both are normal costs of business.

In addition, there are several subsidies for activities which are not imposed public duties in the intended form. Rather, they are social welfare and social (national unity) costs which must be borne by society but which should not be considered as part of the transportation budget. The social welfare subsidies are the Pension subsidy paid to the railways on behalf of their former employees and the Shipbuilding and Fishing Vessel subsidies paid to shipbuilders. (The latter is also a defence subsidy.) The social or national unity subsidies are the Maritimes Freight Rates subsidy paid to railways and truck companies and the Ferry Services Subsidy paid to water carriers.

In the evaluation of the "publicly imposed duty" criterion, it was noted that several subsidies were only partial subsidies, namely, the "At-and-East," Feed Grain, and the uneconomical Branch Line subsidy which is to replace the General Freight Rate subsidy. Although these exceptions are contained within the body of the Act, they do not conform to the general policy declaration which implies 100 percent compensation for publicly imposed duties.

One aspect of the problem of subsidies which has not yet been examined is the situation where there is an imposed public duty but there is no subsidy. Even if cases of this do exist, they are difficult if not impossible to find. One case of an imposed public duty where no subsidy exists has, however, been turned up. This is the Crow's Nest Pass Agreement. In 1890, the Canadian Pacific Railway obtained some $3.4 million in aid for building a rail line through the Rocky Mountains (Crow's Nest Pass) in return for a promise to reduce grain rates

by three cents and "that no higher rates than such reduced rates or tolls shall be hereafter charged by the Company." This agreement was later extended to all railways by Parliament. At least for the other railways, the Crow's Nest Pass Agreement is an imposed public duty and, as such, a subsidy should be paid to the railways.

CHAPTER IX

CONCLUSIONS

The hypothesis of this thesis was: the government has not achieved the following conditions, which are set out in the National Transportation Act, and which are prerequisites to an economic, efficient and adequate transportation system:

(a) Regulation of all modes of transport will not be of such a nature as to restrict the ability of any mode of transport to compete freely with any other modes of transport;

(b) each mode of transport bears a fair proportion of the real costs of the resources, facilities and services provided that mode of transport at public expense; and

(c) each mode of transport receives compensation for the resources, facilities and services that it is required to provide as an imposed public duty.

In brief, it does not appear that the conditions of the National Transportation Act have been achieved.

The National Act states that an economic, efficient and adequate transportation system making the best use of all modes . . . at the lowest total cost is likely to be achieved when all modes of transport are able to compete freely with any other modes of transport. It is important to realize that all modes of

transport are being called upon to pursue one common objective; yet, there is no common regulatory body with the authority to co-ordinate the various modes. Presently, both the federal and provincial governments are involved in the regulation of transportation with several different government agencies being involved in determining the degree of regulation at the federal level.

There are also several specific pieces of regulation which hinder a mode's ability to compete with other modes. For example:

1. Road carriers must apply for operating licenses just as most other modes must do. However, the costs of preparing an application for a public hearing can be substantially higher, in relation to the assets, for a road carrier than they would be for a rail, air, pipeline or water carrier who normally have greater financial stability. "To the typical trucking company, the preparation and presentation of application for licenses . . . can mount to burdensome costs."[1]

2. National air policy prohibits the entry of air carriers, except Air Canada and CP Air, from all mainline routes. The policy restricts the growth of the air mode at least in the mainline corridors to a growth rate which the two major airlines consider adequate. However, what is considered adequate may be well below what an aggressive airline with a new marketing concept could obtain.

---

[1] Purdy, op. cit., pp. 309,310.

3. Railway rates must fall between government established minimum and maximum rates, whereas no other modes have such constraints in their price setting. Thus, when some mode other than rail wishes to penetrate a market, rates can be brought down to a level where railways can no longer compete. In the case of captive traffic, the other modes can exploit the shippers by raising the rates substantially over the costs of the service.

4. In a broad sense, regulation also includes the government's regulation of investment policy. Although it is dealt with in the following section in more detail, the aspect of uniformity will be briefly examined here.

The government's investment policy is not uniform between modes. Table 8-1 (page 105) shows that pipeline and rail carriers receive no major investment in facilities, whereas air and water carriers have both their rights-of-way and terminals provided, and road carriers have their rights-of-way provided. This means that pipeline and rail carriers are at a substantial rate disadvantage due to the fact that they must bear costs which do not have to be borne by the other modes.

The foregoing examples clearly illustrate the fact that the present system of regulation is restricting the ability of some modes to compete.

In regard to government investment in transportation, the N.T.A. states as an objective: "Each mode of transport, as far as practicable, bears a fair proportion of the real costs of the resources, facilities and services provided that mode of transport at public expense." The thesis showed that there is still a

substantial net investment in several of the modes. In the last year available, net expenditure on roads was $634.5 million; water $171.9 million, and air was $393.4 million. Neither have the trends in net expenditures for the modes shown any clear direction. Thus, no conclusions can be made as to whether the government is coming closer to achieving its objective of having the modes pay for the facilities which they use.

In view of the fact that no conclusions could be reached on this portion of the Act, a cursory examination was made to see if any specific user charges have been increased. The examination, however, turned up no cases where user charges have, in fact, been increased since the implementation of the Act. One example was found where a consulting firm (D.W. Carr and Associates) recommended an increase in user charges on the St. Lawrence Seaway. This recommendation was not heeded.

According to the National Transportation Act, subsidies are to be paid to the modes for services which they are required to maintain at a loss in revenue. In Chapter VIII, two aspects of this portion of the Act were examined. The first aspect is where imposed public duty exists, but no subsidies are paid. The second aspect is where subsidies exist but there is no publicly imposed duty.

In the first case, it was found that there are several instances where there is an imposed public duty; however, no subsidy is being paid. Examples of this are the "Statutory Grain Rates" and "At-and-East"Grain Rates. In

addition, railways are only subsidized for 80 percent of their certified loss on branch lines which they are not permitted to abandon.

In the second case, it was found that there are two subsidies, the Regional Air Carrier subsidy and the Railway Grade Crossing Fund, which appear to have no visible ties with imposed public duties. The Regional Air Carrier subsidy is a subsidy to offset start-up costs on a new route. The Railway Grade Crossing Fund is a subsidy for safety equipment. Both subsidies are considered normal operating costs for the other modes.

Several other subsidies are not really imposed public duties as intended by the Act, but rather they are welfare, defence or national unity costs. Although these costs must be borne by society, they should not be considered a transportation cost. Included in these social costs are the following subsidies: Pension subsidy (Rail), Shipbuilding and Fishing Vessel subsidy (Water), Maritime Freight Rates subsidy (Rail and Road), and Ferry Services subsidy (Water).

Overview

In general, it can be said that none of the three prerequisites to the National Transportation Act have been attained. The present system of regulation still impedes free competition. In the case of government investment, a review of the history of investment indicates that there has been little progress towards the objective of cost recovery and that the subsidies are not strictly for publicly imposed duties. The question naturally arises as to why these

prerequisites have not been attained. In order to answer this question, it is necessary to go back to the overall objective of the National Transportation Act.

The overall objective of the N.T.A. is to provide "an economic, efficient and adequate transportation system making the best use of all available modes of transportation at the lowest cost . . . ." This objective must, however, take its place among other national objectives which are equally or perhaps even more important to the well-being of Canada. Included among these high-ranking national objectives are: (1) National unity, (2) Full employment, (3) National defence, and (4) Regional economic expansion.

In some cases, the transportation system becomes the vehicle for pursuing these other objectives. Mr. Herbert Mohring, in his paper, "Transportation Subsidies and the Economics of the Atlantic Provinces," states that this actually happens, in the following statement:

> The federal government has employed a variety of programmes to alleviate the economic plight of these provinces (the Atlantic Provinces). Expenditure on transportation facilities and direct subsidies to those who provide transportation services are among the longest standing of these programmes.[1]

To the extent that these national objectives come before transportation objectives, the economics of the transportation system will suffer. Since society receives secondary benefits from the transportation system, the public must bear a portion of the costs of the transportation network.

---

[1] Mohring, op. cit., p. 1.

Thus, the objectives of the National Transportation Act and the three accompanying prerequisites must be viewed as part of the total system of national objectives, not as a single isolated objective as the National Transportation Act implies.

BIBLIOGRAPHY

Books

Canada. Aeronautics Act. Ottawa: Queen's Printer, 1961.

_____. National Energy Board Act, 1959, c.46, s. 1. Ottawa: Queen's Printer, 1970.

_____. National Transportation Act, 1966-67, c.69, s.2. Revised Statutes of Canada, 1970, c.N-17. Ottawa: Queen's Printer, 1970.

_____. Trans-Canada Airlines Act, RSC 1952, c.268. Ottawa: Queen's Printer, 1952.

_____. Transport Act, RSC 1952, c.271. Ottawa: Queen's Printer, 1952.

_____. Department of Citizenship and Immigration. Canadian Citizenship Branch. Our Transportation Services. Ottawa: Queen's Printer, 1954.

_____. Department of Finance. Public Accounts of Canada, 1972. 3 vols. Ottawa: Information Canada, 1972.

_____. Royal Commission on Transportation, 1961-62. Report. 3 vols. M.A. MacPherson, chairman. Ottawa: Queen's Printer, 1961-62.

_____. Transportation Development Agency. Canadian Highway Systems Study: Federal Interest in Highways: An Historical Perspective, by V. Setty Pendakur and D. Leslie Burke. Montreal, 1972.

Canadian Oil Register, 1972-73. Calgary: C.O. Nickle Publishers Co., Ltd., 1972.

Canadian Tax Foundation. The National Finances: An Analysis of the Programme of Revenues and Expenditure of the Government of Canada. Toronto, 1972.

Canadian Transport Commission. Economics Branch. Civil Aviation Infrastructure Annual Costs and Revenues, 1955-1969. by Z. Haritos and V.D. Gibberd, Ottawa, 1973.

_____. Civil Marine Infrastructure Annual Costs and Revenues, 1955-1969. by Z. Haritos and D.G. Hilbebrand. Ottawa, 1973.

_____. Road Costs and Revenues, 1955-1968. by Z. Haritos. Ottawa, 1972.

Canadian Transport Commission. Research Branch. A Pricing Policy Framework for Public Transportation Facilities. by Z. Haritos. Ottawa, 1971.

Carr, D.W., and Associates. The Seaway in Canada's Transportation: An Economic Analysis. Vol. I: Final Report. Ottawa, 1970.

Currie, A.W. Canadian Transportation Economics. Toronto: University of Toronto Press, 1967.

Davis, Millerd. The Department of Transportation. Lexington: D.C. Heath and Company, 1970.

Dodge, William H. Common Goals of Common Carriers: A Blueprint for Intermodal Coordination. Wisconsin Reprint No. 2 from the I.C.C. Practitioners' Journal, October 1963. Madison, Wisc.: University of Wisconsin: Bureau of Business Research and Service, 1964.

Feltham, Ivan R. Transport Regulation in Canada. Unpublished manuscript.

The Financial Post 1971 Survey of Oils. Toronto: Maclean-Hunter, 1971.

Friedlaender, Ann F. The Dilemma of Freight Transport Regulation. Washington: The Brookings Institution, 1969.

Fromm, Gary, (ed.). Transport Investment and Economic Development. Washington: Brookings Institution, 1965.

Hibbs, John. Transport Studies: An Introduction. London: John Baker (Publishers) Ltd., 1970.

Kates, J., and Associates. St. Lawrence Seaway Tolls and Traffic; Analyses and Recommendations. Toronto, 1965.

Lansing, John B. Transportation and Economic Policy. New York: Free Press, 1966.

Lessard, J.C. Transportation in Canada. Ottawa: Queen's Printer, 1957.

Lieb, Robert C. Freight Transportation; A Study of Intermodal Ownership Policy. New York: Praeger Publishers, 1972.

Luna, Charles. The UTU Handbook of Transportation in America. New York: Popular Library, 1971.

Manno, Peter J. "Outlook for Pipelining Solids." Papers - Eighth Annual Meeting Transportation Research Forum. Oxford, Ind.: Richard B. Cross Co., 1967.

Mohring, Herbert. Transportation Subsidies and the Economics of the Atlantic Provinces. Unpublished manuscript. 1972.

Peel, A.L. "Economic Regulation of Canadian Motor Carriers." Papers - Eighth Annual Meeting Transportation Research Forum. Oxford, Ind.: Richard B. Cross Co., 1968.

Purdy, H.L. Transport in Canada; Competition and Public Policy. Vancouver: University of British Columbia Press, 1972.

Sampson, Roy J., and Martin T. Farris. Domestic Transportation; Practice, Theory and Policy. 2nd ed. Boston: Houghton Mifflin, 1971.

Schreiner, John. Transportation: The Evolution of Canada's Networks. Shaping Canada's Environment Series, No. 5. Toronto: McGraw-Hill Ryerson, 1972.

Stenason, W.J. "Multi-Modal Ownership in Transportation." Papers - Eighth Annual Meeting Transportation Research Forum. Oxford, Ind.: Richard B. Cross Co., 1967.

University of Toronto-York University Joint Program in Transportation. Conference on Canadian National Transportation Policy. Toronto, 1972.

U.S. Department of Commerce. Federal Transportation Policy and Program. Washington: Government Printing Office, 1960.

Wagdin, G.A. Statistics and the Study of Road Transport. Prepared for the 40th Annual Convention of the Canadian Good Roads Association, Vancouver, B.C., September 22-25, 1959.

Annual Reports

Air Canada. Annual Report, 1971. Montreal, 1971.

Canadian National Railways. Annual Report, 1971. Montreal, 1971.

Canadian Pacific Limited. Annual Report, 1971. Montreal, 1971.

St. Lawrence Seaway Authority. Annual Report, 1971. Montreal, 1971.

_____. Annual Report, 1967. Montreal, 1967.

_____. Annual Report, 1958. Montreal, 1958.

Periodicals

Baldwin, J.R. "Transportation Policy in Canada; The National Transportation Act of 1967." Transports, No. 122. June 1967, 460-474.

Camu, Pierre. "Transport in the Economic Evolution of Canada." Transports, No. 122. June 1967, 345-349.

Mullington, M.J. "The St. Lawrence Seaway: Past, Present, Future." Transports, No. 122. June 1967, 401-412.

"The Next Thirty Years in Canadian Transportation." Transports, No. 122. June 1967, 444-459.

Statistical Sources

Canada. Dominion Bureau of Statistics. Gas Utilities (Transport and Distribution Systems) 1968. Catalogue No. 57-205. Ottawa: Information Canada, 1971.

_____. Dominion Bureau of Statistics. Motor Carriers - Freight Quarterly 1970. Catalogue No. 53-005, VII, No. 1-4. Ottawa: Queen's Printer, 1970.

_____. The Motor Vehicle 1970. Part I: Rates and Regulations. Catalogue No. 53-217. Ottawa: Information Canada, 1972.

_____. The Motor Vehicle 1970. Part II: Motive Fuel Sales. Catalogue No. 53-218. Ottawa: Information Canada, 1971.

_____. The Motor Vehicle 1970. Part III: Registrations. Catalogue No. 53-219. Ottawa: Information Canada, 1972.

_____. The Motor Vehicle 1970. Part IV: Revenues. Catalogue No. 53-220. Ottawa: Information Canada, 1972.

_____. Railway Operating Statistics 1970. Catalogue No. 52-003, LI, No. 1-12. Ottawa: Queen's Printer, 1970.

_____. Dominion Bureau of Statistics. Railway Transport Service Bulletin, April, 1971. Catalogue No. 52-004. Ottawa: Information Canada, 1971.

_____. Dominion Bureau of Statistics. Transportation Service Bulletin, March, 1970. Catalogue No. 50-001. Ottawa: Queen's Printer, 1970.

_____. Statistics Canada. Air Carrier Financial Statements, 1970. Catalogue No. 51-206. Ottawa: Information Canada, 1971.

_____. Statistics Canada. Aviation in Canada, 1971: A Statistical Handbook of Canadian Civil Aviation. Catalogue No. 51-501. Ottawa: Information Canada, 1971.

_____. Statistics Canada. Canada Year Book, 1972. Ottawa: Information Canada, 1972.

_____. Statistics Canada. Oil Pipe Line Transport 1970. Catalogue No. 55-201. Ottawa: Information Canada, 1973.

_____. Statistics Canada. Railway Transport 1970. Part I: Comparative Summary Statistics 1966-70. Catalogue No. 52-207. Ottawa: Information Canada, 1972.

_____. Statistics Canada. Railway Transport 1970. Part II: Financial Statistics. Catalogue No. 52-208. Ottawa: Information Canada, 1971.

_____. Statistics Canada. Railway Transport 1970. Part III: Equipment, Track and Fuel Statistics. Catalogue No. 52-209. Ottawa: Information Canada, 1971.

_____. Statistics Canada. Railway Transport 1970. Part IV: Operating and Traffic Statistics. Catalogue No. 52-210. Ottawa: Information Canada, 1971.

_____. Statistics Canada. Road and Street Mileage and Expenditure 1970. Catalogue No. 53-201. Ottawa: Information Canada, 1972.

_____. Statistics Canada. Water Transportation 1970. Catalogue No. 54-205. Ottawa: Information Canada, 1971.